The Linacre Lecture
ON
THE FUNCTION OF THE SO-CALLED MOTOR AREA OF THE BRAIN.

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[WITH SPECIAL PLATE.]

THOMAS LINACRE, 1460–1524, Physician to Henry VIII, one of the benefactors of St. John's College, Cambridge, as well as Merton College, Oxford (see Professor Osler's Linacre Lecture, 1908), founded at both universities provision for medical teaching of which this annual lecture is now one of the units.

My appreciation of the honourable duty of delivering this lecture on the functions of a part of the brain is increased by the fact that Linacre lived just after a renaissance not only in religion but in cerebral physiology. The biological renaissance consisted in the recognition of the grave error made by Aristotle, who endeavoured to guess at function by observing structure rather than living action, and who thereby naturally failed to understand the meaning and purpose of the brain.

Fig. 1 on the plate is a reduction of a hand illumination from a thirteenth century MS. in the Bodleian Library, showing the anatomy of the nervous system, in which, according to the Aristotelian teaching, the brain is not represented, as being only an organ to cool the heart, and having no connexion with the nerves.*

It was reserved for the students and translators of Galen, among whom as a literary expert Linacre was himself pre-eminent, to learn the truths of neuro-physiology from the trenchant experimental method of the Roman physiologist. It is highly appropriate, therefore, on this occasion when Linacre's memory is being respected by his college, that a consideration of some important points in the history of brain function should be the object of the lecture, and the point I have therefore chosen is, What is the actual function of the so-called motor area of the brain?

The idea that localized—that is, restricted—parts of the cerebral hemisphere subserve among other functions definite movements of certain parts of the body, may be said to have commenced with Bouillaud's experimental observations on the vocalization of dogs, since by his researches it appeared that destruction of a certain part of the cerebral hemisphere was followed by loss of purposive vocalization movements of the larynx.

It was not, however, till many years later that the epoch-making discovery of Hitzig[4] and Fritsch opened up the larger field of research, which was extended by Ferrier,[5] until a map of the so-called motor area could be constructed for the surface of the monkey's brain and the various "centres" for the different parts of the body delimited.

Our knowledge of this region has become so increased by subsequent workers that for a discussion of the present state of science on the so-called "motor" area I must confine myself strictly to the consideration of but one part of it—namely, that for the representation of the upper limb—which part of the body, including as it does some of the most highly trained combinations of sensation and movement, is specially worthy of study.

It is also time that yet another protest should be raised against the expression "motor area" as untrue scientifically, and, like many unfortunately convenient expressions, so misleading as to hamper the progress of knowledge.

Dr. Bastian's[3 10] much more logical expression "kinaesthetic area" has, unfortunately, not found general adoption, and yet none better expresses the fact that there is no such thing as a purely motor centre in the cortex cerebri, the whole structure being, in Dr. Hughlings Jackson's language, sensori-motor, or a combined mechanism for the record and execution of afferent and efferent nerve impulses.

Physiologically, the term "motor" has doubtless been employed because of the movements obtained from the Rolandic cortex on excitation. But the term "excitable" area is equally inadmissible when used without qualification, not only because so-called "sensory" cortical regions—for example, the visual area—equally give motor, that is, efferent, results on stimulation, but also because the term leaves out of sight the sensory functions which I have shown are represented in the Rolandic gyri.

We will first briefly consider the topographical outline of the area for movements of the upper limb as determined by means of electrical excitation in the bonnet monkey (*Macacus sinicus*), the anthropoids (the orang and chimpanzee), and in man.

Ferrier's[5] map of the cortex of the Macaque monkey is well known, and represents the arm area as extending on both sides of the fissure of Rolando.

The work of the late Dr. Beevor and myself, begun in 1885, to further analyse more minutely the functions of the arm region, may be summed up as a catalogue of the movements of the different parts of the limb and of their successive order. Although we observed movements, especially of the thumb and fingers, to follow excitation of the gyrus post-centralis—that is, behind the fissure of Rolando—that gyrus we found was not always excitable, and the movements obtained from it were restricted and feeble. We believed at the time† that this was due to the main representation being in front of the fissure of Rolando.

As will be seen directly, this question of the excitability of the gyrus post centralis has now, in the light of modern anatomical research, become interesting on the question of the relation of structure to function, and to the anatomist, as far as the upper limb is concerned, the question of the presence or absence in both central gyri of Betz cells as necessary elements for the intentional movements of the arm segments.

In the first place I would say that I have electrically tested this gyrus either in lecture demonstrations or in the course of experiments in each of the twenty-four years that have elapsed since 1885. Physiologically there is no question that the gyrus post-centralis is more frequently excitable than not in *Macacus sinicus* and in large specimens of *Macacus rhesus*, and that it is less excitable as we ascend the evolutionary scale. But the same point has also been approached in a controlling method by Munk,[19] who, having excised the gyrus pre-centralis in twelve monkeys, found that the gyrus post-centralis was excitable. Grünbaum and Sherrington,[55] however, did not obtain this result in a chimpanzee. So also Rothmann,[48] who has devoted so much time and indefatigable work to the subject of the motor area and pyramidal system, found the gyrus excitable in twelve monkeys (chiefly *Macacus rhesus*), with one exception.

Brodmann,[58] on the other hand, obtained evidence of excitability only in two monkeys, in which he thought that the pre-central cortical structure was abnormally present in the gyrus post-centralis.

The most elaborate investigation of recent times—namely, that by Herr and Frau Vogt,[49] extending over a large series of different species of the lower apes—resulted in the practically invariable conclusion that the gyrus post-centralis is inexcitable. They employed the so-called unipolar method of excitation (see footnote, p. 126).

We will postpone for the present the consideration whether the positive results and efferent results obtained by such stimulation of the post-central gyrus are due to the excitation of a mainly sensory or a mainly motor cortex.

The first experiment in an anthropoid was a solitary

* See also my work on the Spinal Cord, 1892.

† *Phil. Trans.*, p. 158.

observation by Dr. Beevor and myself,[18] of which Fig. 2 (on the plate) is the record.

From it it will be seen that we only obtained evidence of excitability of the post-central gyrus at two points. This single experiment, confirmed in all other essential particulars, has been superseded by the extensive researches of Sherrington and Grünbaum, who were enabled to make a great many experiments on the orang, chimpanzee, and even the gorilla. They found that the gyrus post-centralis in the anthropoid was inexcitable to a stimulus which evoked* a response from the gyrus pre-centralis, but "facilitated" elicitation of movement from the gyrus pre-centralis.

In man the cortex cerebri has been frequently stimulated in order to guide the surgeon in various operations undertaken for the relief of conditions irritating this region. Up to the year 1890 Beevor and I collected the facts then available, and others have been contributed since by Lamacque, Keen, Lloyd, Mills and Frazier, F. Krause, Cushing, myself, and others. Inasmuch as the exact determination of the cortex stimulated has not always been possible under the special circumstances of an operation, I put together twelve years ago the points that I had myself noted and could be responsible for. From the photograph reproduced in Fig. 3 (see plate), it will be seen that in man I have never elicited a motor response by stimulating with a minimal current the post-central gyrus. Last year, desiring to remove the whole upper limb centre in a patient who was suffering from violent convulsive movements of the arm, I stimulated the Rolandic gyri, and Fig. 4 (see plate) is the rough sketch made immediately after the operation. The inferior genu of the fissure of Rolando is marked by a G, which is placed upon the gyrus post-centralis, and which was inexcitable to the current adequate for the points numbered (except 7) on the gyrus pre-centralis.

We may be certain, therefore, that the more essentially motor part of the kinaesthetic representation of the upper limb lies in the gyrus in front of the fissure of Rolando. We shall see presently that though this is the case, the Galenical method of experimentation, namely, the removal of this same centre, proves that this is not the only part of the cortex cerebri from which voluntary movement can be obtained, and that it is also the seat of highly important sensory as well as motor functions. (Cf. especially Mott[23].)

We may now examine the intensely interesting work which has been contributed of recent years to extending our knowledge of the anatomy of the different regions of the cortex cerebri. When the discovery of "motor centres" first attracted attention, Dr. Bevan Lewis,[6] as long ago as 1878, showed that the pre-central gyrus contained giant pyramidal cells in groups, and he mapped out this part of the cortex as being specialized for motion. Possibly because the groups of these giant pyramidal cells did not correspond to the foci of representation as demonstrated by the method of excitation, and possibly also because (as he showed) there are areas of the "motor" cortex where no such cells exist, his observations did not receive the attention they deserved.

A fresh impulse to the whole subject was given by Flechsig's myelinization method, but that method, which is essentially crude, did not produce results which commended themselves to most observers, and the subsequent alterations by Flechsig of his areas also did not strengthen his conclusions. At this juncture Campbell[41] began his remarkable work which, by the liberality of this University and the Royal Society, has been presented to the scientific world in full publication. Campbell's work has the further merit that it is in essential particulars in agreement with the independent and equally remarkably careful and thorough investigations of Brodmann.[34] The map (Fig. 5 on plate) of the cortex cerebri in man by Campbell will now make clear the point I have been dwelling on, and from it you will see that to include the whole efferent or motor area as determined by excitation we must take two of Campbell's regions, both his intermediate pre-central and pre-central areas, although he wishes, apparently, the term "motor" to be restricted to the latter. This suggested restriction of the term "motor," namely, because the giant pyramidal cells of Betz are to be found in only a certain (the major) portion of the pre-central gyrus, cannot be justified, since it would exclude the motor centres for the face, larynx, pharynx, and eye muscles, as well as part of the representation of head movements. It also disregards the anatomical rule that an efferent or motor cell varies in size according to the distance the axone has to travel in the central system—for example, the largest pyramids in the pre-central gyrus are in the leg area. Now, as regards the structure of the cortex, it may be seen from his drawings of vertical sections of the cortex cerebri that the cells of which it is built up may practically be divided into two sets—small and large. The innumerable smaller cells are grouped chiefly into two sets—polymorphic and granule—and the larger cells may be roughly divided into the giant pyramids or Betz cells, medium and small pyramids (Figs. 6, 7, and 8 on plate). The pyramid cells must be regarded as the outgoing stations in any part of the cortex, because their axones pass down through the central nervous system, and thus, again, it is not philosophical to consider the Betz cells as the only "motor" element in the cortex cerebri. The much more numerous small cells of polygonal and varying outlines forming the granule layers may be regarded as belonging to a mainly afferent or "sensory" receptive and associative system—that is, the mechanism underlying the preliminary stages of a cerebral motor response. This view of the polymorphic and granule cells of the Rolandic area which I put forward[13] at the Congress of American Physicians and Surgeons at Washington in 1888 on the somewhat slender grounds of homology, has now received the adequate criticism of research, and the receptive character of the cells may be considered to be established by the researches of Bolton, Ramon y Cajal, Mott, Watson, and v. Kappers, among many others. Moreover, the true method of regarding the anatomical construction of the cortex cerebri should begin by accepting the principle first enunciated by Hughlings Jackson from the consideration of the nervous system from the evolutionary standpoint—namely, that every centre in the nervous system must be sensori-motor. Such a thing as a pure motor centre could not exist, since it would be unfurnished with the causative sensory mechanism essential to the occurrence and production of the motor or efferent impulse; and, in fact, a muscular action would be an effect without a cause, an absurdity which indeed the old idea of psychic spontaneity of action involved.

The cortex itself affords a striking example of the disadvantage of any narrow discrimination of nerve centres into "motor" and "sensory." Thus, for the production of the movement of conjugate deviation of the eyes there exists a centre in the motor area so-called, and yet, as Schäfer[15] showed, excitation with a rather stronger stimulus will produce precisely the same movement from a so-called sensory centre—namely, the visual area of the occipital lobe. This latter, the area striata of Elliot Smith, though enormously rich in its granular layers, contains certain pyramidal cells (Meynert's) which are the motor or efferent element in the visual sensori-motor centre. It is obviously quite possible that the motor phenomena obtained from the post-central gyrus, and which can be obtained in different individuals of the Macaque species, may be also instances possibly of stimulation of a mainly sensory centre producing efferent, that is motor, phenomena through its medium sized pyramids.

We may now turn with advantage to Campbell's anatomical investigation of the post-central gyrus, and may remark in passing that Brodmann's description of the same only differs in a more minute subdivision of the cortex of the convolution. Campbell suggests that the post-central gyrus in its richness in small or granule cells, in the absence of Betz cells, and in the arrangement of its fibres, should be regarded as a sensory centre, and this raises at once an enormously large question, namely, What is the seat of the representation of all forms of sensation of the upper limb in the cortex cerebri? This is also particularly the moment to draw attention to the

*It should not, in my opinion, be assumed that the effect of a minimal stimulus, evoking, as it often does, but a single movement of one segment of a limb, is a criterion of all that is represented—that is, in that portion of the cortex cerebri. The response elicited from the cortex cerebri by a stimulus is within limits proportional (1) to the strength of the stimulus and (2) to the degree to which the movements of any given segment or part of the body are represented at the point stimulated. Consequently a minimal stimulus may only be adequate for one item of several represented in one portion of the cortex. It also must not be forgotten that, physiologically considered, an electrical stimulus is a crude method of exciting a nerve centre.

disadvantages attendant on the way in which this subject has been dealt with in textbooks and even monographs. As a recent paper by Mills and Weisenburg[46] shows, some neurologists still think of the nervous system as being made up of sensory centres and motor centres respectively. It appears to me that on this all-important question not only the general principles of Bastian and Jackson, but also the original teaching of Munk, are in danger of being overlooked in this country and, perhaps, in America. Munk[7] has always spoken of the so-called motor area as the "Fühlsphaere," and has regarded the cortex cerebri of this region as the mechanism for storing up the memories of movements—he holds, in short, no part of the cortex should be termed the motor area, since by implication the representation therein of those sensations and sensory disturbances which of necessity precede every muscular action is left out of sight. Every lesion of this region in man that I have seen during the past twenty-four years has served to confirm Bastian and Munk's mode of regarding cerebral function.

Attempts made, therefore, to discover areas of the cortex cerebri in which the representation of sensation (all forms) of parts of the body might be very strictly localized in sensory centres have hitherto failed in proving the existence of such areas. Schäfer and myself[17] observed reduction of sensibility in the limbs after lesions of the limbic lobe, a region which Ferrier had suggested might be a field of sensory representation other than osmotic; but it is possible that the effects we observed were due to deeper involvement of the corona radiata, and that thus the thalamo-cortical system was injured near its origin. Campbell has inadvertently represented me as relying on these few experiments as indicating a centre for somatic sensation. On the contrary, from the year 1886 onwards (see index of papers referred to) I have constantly demonstrated and published evidence to show that a considerable proportion of the sensory representation of the upper limb exists in the so-called motor or Rolandic region.

The first case by which I established this fact in 1886 was one of excision of a small traumatic cyst for epilepsy, which operation (with ligation of veins immediately surrounding) caused the following phenomena:

> After the operation the patient was at first completely paralysed in the digits of the right upper limb, and for further flexion of the wrist and supination of the forearm.
> Coupled with this motor paralysis there was loss of tactile sensibility over the dorsum of the two distal phalanges of the fingers.
> He could not localize a touch anywhere below the wrist within the distance of one internode; finally, he could not tell the position of any of the points of the digits. Thus we have here apparently a distinct instance of loss of tactile sensibility and muscular sense, coupled with motor paralysis, all due to lesion of the cortex. (BRITISH MEDICAL JOURNAL, 1886, vol. i, p. 673.)

The lesion was by measurement estimated to lie in the centre of the upper third of the gyrus pre-centralis (see Fig. 9 on plate). The patient is (1909) in robust health.

A second case, published at the same time (BRITISH MEDICAL JOURNAL, 1886, page 670) was that of a country lad suffering from a strictly localized tuberculous tumour of the Rolandic gyri, the removal of which, however, affected the post-central gyrus. In this case exact localization was obtained, for the patient eight years later died of tuberculosis and the brain was photographed.

He not only exhibited the like sensory and motor defects, but also, without questioning, stated that (deep) painful impressions evoked by passive movement of the (temporarily) paresed arm ran up the limb, side of neck, and through the head to the seat of the extirpation, and he graphically indicated the actual spot by placing his finger upon the dressing exactly over the wound (see Fig. 10 on plate).

During the many years which have elapsed since these cases, I have had innumerable opportunities of confirming these observations, and have published the proofs of the same.

But although I have frequently observed the effects of comparatively small lesions in the pre-central and post-central gyri, it was not until last year that I obtained my first example of an absolutely pure lesion of one of these gyri alone, namely, the gyrus pre-centralis, and one which by repeated examination I am satisfied affords the final proof of the position here advanced, namely, the sensori-motor character of that convolution.

CASE.

The case was that of a powerfully developed boy, Hn., aged 14, the elder of two children of healthy parents. He had had no illness and suffered no accident, but at the age of 7 had gradually developed athetoid movements of the left hand, which then developed into violent convulsive movements of the whole upper limb, in which the arm was usually strongly flexed and adducted in jerks across the trunk, and more rarely flung out in abduction. The elbow was fixed in semi-extension, the forearm strongly pronated, the wrist flexed, and the fingers either in an interosseal position or flexing and extending independently. The movement was worse on walking, and when his attention or the attention of others was drawn to it. When the limb was quiet his purposive or voluntary movements were normal and powerful. The reflexes, superficial and deep, were everywhere normal; his sensation—all forms—was also normal.

Hn. was in a very distressing condition, and was referred to me by Dr. Risien Russell with the view of arresting the spasms by an operation. Having stopped athetoid and clonic movements in two previous cases by excision of the so-called "motor" area, I advised that the arm area in this case should be delimited by excitation and then removed.

OPERATION.

The operation was performed on March 20th, 1908. The shaved head presented a rather unusually globular outline; the bone was thick and vascular, and the dura mater was also hyperaemic. The bone was removed, as shown in the accompanying diagram, so as to expose completely the Rolandic region. The dura mater was tense, the vessels of the pia mater distended, and the brain turgid, even though the patient was under the influence of oxygen as well as the anaesthetic. The pia mater, especially in the sulcus pre-centralis, had a distinctly embryonic appearance. The cortex was then stimulated with a Kronecker graduated coil furnished with three dry Obach cells. The electrodes, bipolar, were 2.5 mm. apart; a current of 300 Kronecker units was just adequate to evoke a response occasionally from the gyrus pre-centralis, but it was found better to employ a current of 500 units to obtain constant results.

In the first place a current of this latter strength—that is, 500 units—produced no response from the gyrus post-centralis; this, as stated above, is in accord with the results I have previously obtained clinically on stimulating the cortex in man.

The gyrus pre-centralis was then thoroughly explored, and the results of stimulation at the points numbered in the accompanying diagram (see Figs. 4 and 11 on plate) were as follows:

Results of Stimulation.

1. Movement of the left side of the face.
2. Abduction of the left thumb, and to this on repetition of the excitation was added flexion of all the fingers.
3. Flexion of the fingers, flexion of the wrist, with ulnar adduction and late flexion of the elbow.
4. Extension of the fingers, ulnar abduction of the wrist, questionable flexion of the elbow.
5. Extension of the wrist, elbow held at a right angle in "confusion." (Beevor and Horsley.)
6. The same movements as 5, and in addition abduction of the shoulder.
7. No movement of the upper limb.
8. Elbow held at a right angle, powerful retraction of the shoulder.
9. Elbow at a right angle, protraction of the arm, and extension of the wrist.
10. Nil.
11. Protraction of the arm, elbow at an obtuse angle, extension of the wrist, and questionable extension of the fingers.

No other part of the cortex in the neighbourhood giving any response in the upper limb, the gyrus thus marked out was excised very carefully by making a vertical incision through the pia mater along the middle of the surface of the convolution, reflecting the pia mater to the sulci on each side and gently separating it to the bottom of the sulci so as to permit of excising the whole depth of the gyrus pre-centralis without any injury to the neighbouring gyri or even to the vessels in the sulci, beyond, of course, the laceration of the smallest branches entering the portion of gyrus removed.

Fig. 12 on the plate is a photograph of the arm centre

thus excised with a millimetre scale appended, and in Fig. 13 its position is represented by the shaded area.

STRUCTURE OF THE GYRUS REMOVED.

After what has already been stated concerning the function of the pyramidal cells, the histological structure of the gyrus removed is of notable interest. At the operation I noticed that not only was the post-central gyrus unusually narrow, but that the vessels and membranes in the line of the fronto-parietal vein were of a somewhat embryonic type. Histologically also, as will be seen from the accompanying photographs (Figs. 14, 15, 16, 17, on plate), the pre-central gyrus differed in essential particulars from a normal convolution. Thus the depth of the layers of the cortex was reduced about 5 per cent.; the granule layers were not well differentiated and were poor in cells. There were a fair number of medium-sized pyramids (here and there arranged in groups); but the Betz cells were represented by extremely few specimens, only in the upper part of the area and in the anterior wall of the central fissure, none of which were perfectly normal in type or size and all somewhat shrunken in outline. Further, the apical dendrite of almost all the pyramids is seen to be altered in a spiral manner* more or less, and the cells show marked physical change, though still, in the large majority of cases, they exhibit normal tigroid bodies. The corkscrew shape of the apical dendron in lesions of the cortex cerebri has been described by Collins,[26] and his drawing (loc. cit., p. 382) shows a similar deformity of the pyramids from a case of chronic epilepsy.

The abbreviation in height of the cortical layers suggests that the increase in neuroglia which is evident may partly be responsible for the spiral outline of the dendrites and nerve fibres in the corona radiata, but Dr. Gordon Holmes has observed the same change in portions of cortex excised under like circumstances. It is possibly, therefore, an artifact due to manipulation and shrinkage.

The importance of the foregoing facts will be appreciated when it is remembered that the corresponding (left) upper limb was strong and muscular, and that all voluntary movements were readily and strongly performed when the limb was not the seat of violent spasm. If, therefore, the doctrine that the "motor" cortex is wholly dependent upon the giant pyramids or Betz cells were true, the pre-central gyrus in this case could not be accepted as the so-called motor centre for the upper limb or the source of its voluntary and spasmodic movement. Yet that it was so is shown by the gratifying fact that the spasmodic movements totally disappeared from the moment that the gyrus was removed, and have remained absent not merely during the short period of total paralysis of the arm but to the present time—that is, during thirteen months—and that since a month after the operation purposive (that is, voluntary) movements have returned and are developing in efficiency, in spite of the fact that the Betz cell area for the upper limb has been removed.

That the Betz cells are not indispensable for purposive muscular actions has also been shown by Brodmann. The precise rôle of these cells has yet to be defined; but that they furnish much of the pyramidal tract is well ascertained, especially by the recent researches of Holmes and Page May.[51]

EFFECTS OF THE EXCISION OF THE GYRUS PRE-CENTRALIS.

Briefly summed up, the effects in Hn.'s case of the removal of the so-called motor centres for the upper limb in the gyrus pre-centralis may be stated as follows:

Immediate.—Disappearance of spasmodic movements.
Complete loss of voluntary movement of the left upper limb.
Post-axial-and proximal atopognosis of the same.
Complete astereognosis of the left hand.
Moderate anaesthesia to all forms of sensation of the left upper limb, maximal at the periphery.

Remote (that is, a year later).—Permanent absence of spasmodic movements.
Partial recovery of voluntary movement of left upper limb.
Proximal atopognosis of left postaxial fingers.
Astereognosis of the left hand.
Slight tactile anaesthesia of the ulnar periphery of the left hand.

* In many cases the large pyramidal axones also presented a wavy outline.

Further detail of these phenomena must now be given, and it will be recognized that they are in full accord with the results arrived at in 1886, namely, that in the same region of the cortex cerebri sensory and motor representation exist together. The concluding paragraph of a paper I published[16] in the *Deutsche medicinische Wochenschrift* in 1889 expressed the position which I held then, and to which I would only now add the subject of topognosis.

> Every functional centre, at any rate, in the so-called motor part of the cerebral cortex is of a focal nature—that is, one finds that the centre is a definite point at which a given movement is most strongly represented and from which this is gradually diminished. Further, all such centres are in their nature kinaesthetic, and the kind of sensation which is thus localized in the same focus is of a twofold character—that is, a slight tactile sensibility and the so-called muscular sense (loc. cit., No. 38).

That, in fact, differentiation is one of degree and not of kind. A gyrus may justly be described as mainly sensory or mainly motor, but never one to the exclusion of the other, or, as Dana[12 22] puts it, "cortical anaesthesia is always accompanied with some degree of paralysis," and Förster,[32] in his monograph on cerebral anaesthesia, draws attention (p. 143) to the fact that the finest localization of sensation in the segments of the limbs is proportional to their mobility.

Before stating the facts found, a few general considerations on the questions of the kinds and mode of appreciation of sensory changes in cerebral lesions must be prefixed.

Of course, a motor phenomenon, from the nature of the construction of the nervous system and the wide representation of afferent impulses, must always exhibit localization in a more striking and concentrated form than a sensory phenomenon.

Probably this has led to the sensory changes in lesions of the so-called motor area being overlooked in the past. But another reason has been that the clinical testing of sensory changes has not only been rough in method but also employed without reference to other associated higher functions of receptivity. Thus Henri's[20] method, introduced in 1898 of simply recording the patient's knowledge of a point touched is often spoken of as though it provided an examination of the person's localizing power as regards tactility, whereas it only expresses the fact that the contact spot can be named. Loss of this knowledge means a very profound and extensive loss of sensory perception corresponding to complete peripheral nerve lesions, and therefore connotes, as far as the cerebrum is concerned, a widespread destruction of the hemisphere. Such anaesthesia, therefore, ought not to be expected from a limited lesion of the cortex cerebri, but, on the contrary, a loss of specialized function having direct relation to the co-ordination and execution of movements must be looked for.

Tactile localization means not only the defensive appreciation of a point of the body touched, but also the position of that point in space—that is, its spatial relation to the object touching.

From the list of sensory defects I observed in 1886 to follow removal of the so-called motor cortex, it was clear that we had before us precisely the kinds of anaesthesia which should be exhibited in accordance with Munk's views, that is, those sensory functions were disordered which are directly connected with the accurate evolution of a movement, and constitute his "memories of movements."

In following out this line of thought I used, in testing for loss of localization of touch, a method which should give not only the record of the spot touched, but also the appreciation and indication by the (vision screened) patient of the position of the contact spot in space—that is, its position in relation to the middle line of the body, its distance from the body, and above all its relation to the other parts and segments of the limb.

For the fulfilment of these requirements the method must obviously include indicative response on the part of the person observed, and I therefore caused the patient to indicate by placing the forefinger of the normal hand on the spot where he felt the touch applied to the opposite paresed hand.

This method immediately revealed the fact that lesions

of the Rolandic region caused besides a loss of appreciation of the lightest tactile stimuli a more important loss of localization in space of the spot touched.

To this latter loss of function I applied the term "atopognosis."

I now wish to point out two facts in regard to the psychical groundwork of this error of atopognosis. The nature of the test depends on the fact that the vision-screened patient feels the touch. If he is asked as to where it is he may reply quite correctly and write it by Henri's method on a diagram—as, for instance, that it is on the ungual phalanx, and yet, if asked to denote the exact spot touched, he will put his indicating finger on the correct digit possibly but too proximally—that is, one or two segments nearer to the body. If the stimulating touch has been considerable in degree or accidentally excited deep sensibility, the person, when his indicating finger touches his hand at the wrong—that is, too proximal—spot, frequently recognizes his error and slides the finger down to the correct spot touched. The refinement of this form of anaesthesia testing is thus considerable, because being a loss of knowledge of position of the part touched as compared to other parts of the limb, it is a step in the psychical response to a stimulus higher than the mere appreciation or not of an excitation.

This is well shown by the following control observation. Inasmuch as the patient preserves a great deal of the sensation of the limb, the loss is purely relative between the segments of the limb, and, therefore, whether the hand, touched and tested, is placed directed down the body parallel to the sagittal plane or pointing upwards should not affect the result.

This is, in fact, the case, for the spot to which the stimulus is referred by the patient still is too proximal—that is, nearer to the body than the spot actually touched. A further interesting point also soon appeared among the results obtained by this method. Investigations on the muscular sense, and of joint or arthric sense in particular, have drawn attention to the fact that when the imperfectly anaesthetic segments of the limb are touched, the point indicated by the observed individual is frequently near to an intersegmental joint. This may be assumed to be due to the psychical record by the cerebral cortex of the joint or arthric localized sensory impressions which constitute such a large part of the so-called muscular sense. As far as I have seen, the reference to a joint is most pronounced in the case of the wrist, and in the next degree that of the elbow.

The second phase of error in topognosis found in lesions of the "Rolandic region," by which term I mean the two central gyri, is extremely definite, and occurred in the present case of Hn. I cannot say, however, whether it is represented in the pre-central gyrus so much as in the post-central. This error is one at right angles to the direction of the error of proximality. If the hand is tested as before, the patient's vision being screened off, it will be found that he places the indicating finger not merely incorrectly as regards proximality, but also as regards the distance from the median plane of the body. Thus in a marked case of this loss, if the index finger be touched the patient will indicate a spot on the third or on the ring finger. Much more rarely the error will be towards the middle line.

For many years I have referred to these two varieties of the transverse axis error in regard to the limb itself as post-axial and pre-axial respectively, and in rare cases of severe disease and destruction of the parietal region of the brain, in which there is a widespread loss or damage of the thalamo-cortical system, and possibly direct damage to the thalamus, there is an obvious reference towards the middle digit. Further discussion in detail of this and of its interesting resemblance to spinal cord representation is not necessary here, since it is dealt with at some length in a special paper by Dr. Colin Russel and myself,[45] but I must point out that this error in the transverse axis is not a simple question of spatial localization, since it includes two additional and governing considerations: (1) The degree of specialization of the first two digits, compared to the ulnar or post axial fingers; (2) the question of the true position of the upper limb at rest.

Of these I will on (1) only say now that the thumb is so intensely and widely represented in the arm area that it never exhibits atopognosis except in very extensive lesions consequently a limited loss is appreciated only on the ulnar side of the hand. The question of post-axial sensory representation I refer to again, but it is a subject worthy of a lecture by itself, if only that the most striking demonstration of cortical failure in a functional patient is the well-known numbness of the little finger (cf. also Bonhoeffer, Fischer, etc.). And on (2) that the ordinary acceptation of the so-called anatomical position of the limb—namely, extreme supination, palm in front—is unfortunately a constant source of fallacy, the real fact being that the forearm at rest is not supinated but pronated, and that consequently the dorsum of the hand is directed forwards, is of necessity more exposed to external contacts, and therefore more frequently the instrumental surface of spatial record.

The bearing of this is that since, as before stated, atopognosis is most readily demonstrated on the dorsum of the hand, a *post-axial* error is really one of direction away from the middle plane of the body. The important question of the relation of the surface of our body to the space immediately surrounding us, and the relation of the different points in space to the middle plane of the body, I discussed in the Boyle Lecture[42a] four years ago, and therein showed by a special plate method, which was subsequently more fully developed by Dr. Slinger and myself,[44] that inaccuracies in our knowledge of space, and consequently of the position in space of the various points on the surface of our body and limbs, increase as we pass from the surface of the body towards the extremity of the limbs and from the mesial plane of the body outwards to either side. All these determinations of the points in space being effected by exploration of the limbs, our knowledge of localization is, apart from visual impressions, a compound result of muscular, arthric, and cutaneous sensations. It now will again be obvious how these particular forms of sensation, namely, slight tactile sense, muscular sense, and topognosis, are inseparably bound up with the representation of movement in the same region of the cortex, namely, the so called motor area.

I was much interested to find a short time ago that Volkmann[2] in 1844 drew attention to the fact that if a normal person was blindfolded then touched lightly on one finger with a pointed instrument and asked to indicate with another point the spot touched there was frequently an error and that the direction of the error was in the long axis of the limb and amounted to a line or more. It is curious that in the few observations which Volkmann seems to have made he found the error to be more usually distal. My own experience with a very great number of observations, since they extend over many years, is the reverse, and that, both in normal people as investigated by my plate-test and in people the victims of cerebral lesions, proximality is the ruling character of the error and distality the exception.

CHANGES IN SENSATION OBSERVED IN HN. AFTER EXCISION OF THE GYRUS PRE-CENTRALIS.

We may now expand somewhat the brief summary given above of the effects of the operation in Hn. The temporary character of the severe effects observed directly after the interference proves that the sensory representation of the upper limb extends over a wide area of cortex—namely, at least both Rolandic gyri. Practically these provisional phenomena disappeared within three to four weeks after the operation, and, therefore, as fifteen months have now elapsed it is possible to determine accurately what permanent change or loss of function is coincident with the removal of the gyrus pre-centralis.

(a) Position of the Limb.

During the first twelve days after the operation the limb was motionless and flaccid. The patient was imperfectly aware of the position of the limb, and felt a "funny numbness" all down the left side, and mostly in the leg. This subjective numbness of the opposite side is, of course, typical of all lesions of the parietal cortex, whether functional or organic, and this instance may be compared to Fischer's closely studied case.[42]

At the end of the first fortnight he knew the general position of the whole limb by reason of his appreciation of the contrast between the temperature and roughness of the blanket and the surrounding objects. Nine months later, if the limb were kept at rest for some time, he lost

knowledge of its position. He now (June, 1909) knows the general position of the limb in the dark.

(b) Position of Digits.

The position of the digits was correctly described, but not correctly imitated by the right hand until the third week.

Estimation of lengths and breadths by stretching the digits apart was at first entirely wrong (for example, 4 cm. distance described as 4 mm.), but gradually improved *pari passu* with the recovery of voluntary movement, until, nine months after operation, his error in estimates of separation of the digits was not more than about 30 to 50 per cent. (see stereognosis). The error is now reduced to about 30 per cent.

(c) Topognosis.

During the first fortnight atopognosis was very marked, and the first thorough examination at the end of the first fourteen days showed that the atopognostic error was:

(*a*) Proximal value, 2 segments (that is, distance too high);
(*b*) Postaxial value, 2 digits (that is, distance outwards from mid-line of body).

Similarly, as the recovery of movement has taken place, there has been some improvement in the patient's topognosis. By the ninth month the post-axial error almost disappeared and the proximal error was reduced to about 1.5 segments on the average.

Now, fifteen months after, he exhibits the typical atopognostic peripheral and ulnar distribution of response to the lightest touches thus:

Left Hand (Right Indicator).
5th digit, 2 segments proximal error.
4th ,, 2 ,, ,,
3rd ,, 1 ,, ,,
2nd ,, Correct.
1st ,, Correct.

The illustrations 5 and 6 given by Fischer[42] (loc. cit., p. 105) would fairly apply to both the topognostic error as well as the diminution of tactility in Hn.

(d) Tactile Sensibility.

The slight loss of tactile sense (superficial, of course) which was evident in the first cases examined in 1886 has been present throughout in Hn. From the first, cotton-wool was felt on all hairy parts. Light touches were not felt on any ungual phalanx, and still are not on those of the fourth and fifth digits.

(e) Temperature Sensibility.

Fourteen days after the operation a test tube of water heated near the temperature of the hand was not felt on the ungual phalanx, was occasionally detected on the middle phalanx, and well appreciated as warm on the forearm. The cold tube was recognized as cold everywhere.

At the present time (fifteen months after) there is slight temperature hyperaesthesia to either heat or cold.

(f) Pain (Pin-prick).

Both the appreciation of the point of a needle and the localization of the same exhibited precisely the same diminution and topognostic error as the reaction to touch; a parallelism in representation to be referred to again later.

(g) Stereognosis.

The most profound sensory change produced by the removal of the gyrus pre-centralis was inability to recognize the form of objects. The subject of stereognosis, as originally investigated by Puchelt,[1] and later by Hoffmann,[8] has received a great deal of investigation, and by some it has even been regarded as a special sense, but, as shown by many authors, it is but a compound experience of several forms of sensation as well as of movement*—for example, tactility, muscle sense, arthric sense, temperature sense—in fact, is but the memorialization of exploration and tactility.

The allied subject of sense of volume I have alluded to above under position of the digits. In view of the current hypothesis that the postero-parietal lobule, or the gyrus post-centralis, is the centre for stereognostic perception (Cf. Mill,[46 etc] Bruns,[29] Redlich[21]), it was especially important to note what alteration occurred in the case of Hn.

Tested with all well-known domestic objects as being easier of recognition than geometrical figures, it was found that, after the operation, Hn. could recognize nothing (nail-brush, prayer-book, bottles, coins, knives, pipe, matchbox) when the objects were placed in his hand, and even when the fingers were pressed over them, though he once guessed a tumbler to be a bottle because it was cold.

When I was thus testing him for stereognosis three weeks after the operation he made the striking remark: "If I could only move my hand about I should know what the things were," thus showing under the stress of effort what the real basis of the stereognostic sense is—namely, merely a complex of tactile, muscular, and arthric memories of movements, which are, in fact, the compound experiences of grasping and feeling objects.

At the present time the astereognosis remains extremely marked. Thus, on April 24th, 1909, he could not recognize even a glass lens, keys, small box, etc., though he evidently could appreciate wider contacts of surface.

COMMENTARY.

It is thus quite clear that the so-called motor cortex is a sensori-motor structure, of which the motor element is the principal funnel-like outlet for afferent impressions coming from many parts, especially the gyrus post-centralis and optic thalamus.

Precisely similar observations have been made by Bonhoeffer[28 37] in lesions of the Rolandic region. Of these in his first case the destruction may have been limited to the pre-central gyrus; but as vessels in the pia were tied possible involvement of the gyrus post-centralis cannot be excluded, and therefore objection might be taken to it as an absolute proof of the pre-central representation of sensory function. This criticism also applies to the succeeding interesting cases in Bonhoeffer's paper, but he fully confirms the parallel relation between the loss of motor function and the diminution of tactile sensibility of the periphery, as well as the parallel degree of astereognosis.

Finally, seventeen years ago a most interesting demonstration of the sensori-motor function of the Rolandic cortex was made[20a] by Ransom, who proved that treatment, including direct excitation of points in the "motor" cortex in a non-anaesthetized patient, evoked (1) a vague tingling sensation, (2) increase of muscular sense, (3) muscular contraction. Ransom concluded his remarkable communication by urging the need of recognizing the two-sided constitution of a nerve centre—namely, sensori-motor.†

That the representation of the two sides of the activity of a nerve centre must be thus proportionately associated was, I believe, not fully accepted in Germany, in spite of Munk's teaching, until the appearance of C. Wernicke's[25] paper in 1895. The recent researches of Bonhoeffer,[37] Fischer,[42] and others, however, have placed on a firmer basis, among other points, the essentially peripherally and post-axially graded representation of sensation in the Rolandic cortex.

This brings me to the next question, What is the function of the hinder Rolandic convolution, the gyrus post-centralis, and at any rate that part of it which topographically is part of the arm centre? Since I am not cognizant of the post-central gyrus having ever been excised without injury to surrounding convolutions, it is only possible to surmise from clinical cases in which the Rolandic region is generally affected what additional neural loss is caused when the gyrus post-centralis is destroyed as well as the gyrus precentralis. Study of the effects of lesions of both the central gyri, of which I have seen many instances, fully supports the general view that the former constitutes part of the area of sensory representation of the upper limb in the cortex cerebri. The view that it is the sensory centre of the upper limb was put forward long ago by Mills,[14] who, on the basis of clinical cases, hazarded this hypothesis, as well as that it was the centre for stereognosis, and that while it was the sensory centre for the upper limb the pre-central gyrus was the motor centre. His latest

* As Long[31] excellently says of this factor in stereognosis, "la motilité elle même doit être suffisamment conservée pour permettre la palpation."

† Since this lecture was delivered, similar and differentially important evidence has been obtained by Cushing,[50] who by electrical excitation of the cortex, under circumstances which render localization accurate, elicited in two cases sensations of tactility from the gyrus post-centralis, and sense of muscular movement as well as actual movement from the gyrus pre-centralis.

monograph on the subject with Dr. Weisenburg[46] is founded on six cases, in only one of which was an autopsy obtained, and I am not aware of any case having yet been published in the literature of this important question, in which it was shown that a lesion* was restricted to the post-central gyrus. Under these circumstances it seems to me premature to formulate any final conclusions as to the function of this gyrus. But in view of Campbell's and Brodmann's demonstrations of its richness in granules and its architecture generally, together with the fact I have just stated, that lesions of both central gyri produce far more sensory disturbance than lesions of the pre-central gyrus alone, I think we may safely conclude that the post-central gyrus is part of the cortical area in which the sensory representation of the upper limb is located. Inasmuch as the sensory properties of the upper limb are all directed to the efficient action of its muscles, it is also not assuming too much to say that like the pre-central it is a centre for tactility topognosis, muscular sense, etc. As regards Mills's claim, that it is the sole centre for *stereognosis*, this clearly cannot be justified, as my present case and others in which the lesions did not involve the post-central gyrus prove.

Just as the disturbances of sensation which follow destruction of the Rolandic gyri are clearly due to loss of the pre-central as well as the post-central convolution, so it is now also certain from the case of Hn. that the pre-central gyrus is not in man the only out-going or motor centre for the voluntary movements of the upper limb. This, indeed, was already made probable, not only by many experiments on the lower apes, but also by the important experiments of Grünbaum and Sherrington[35] on the chimpanzee, in which animal these observers found that after the arm area in the so-called motor pre-central gyrus was excised, the purposive movements returned "in a few weeks," and, further, that this compensation was not effected by the opposite arm area in the contralateral hemisphere.

CHANGES IN MOTION.

I will now proceed to describe the precise recovery of voluntary power in the case of Hn.

(*a*) *Consensual Movement.*

The arm immediately after the operation was perfectly motionless, but by the fourteenth day, when on my request the right (normal) hand was strongly clenched by Hn., his left forearm slowly supinated, the wrist slightly flexed, and the fingers also very slightly flexed.

This extensive consensual response strikingly resembled that obtained in a case of chronic tuberculous disease of the "motor" cortex I observed[9] in 1884. Possibly the further analysis of this phenomenon will aid in the solution of the problem how recovery of "voluntary" movement is obtained after destruction of the gyrus pre-centralis.

(*b*) *Purposive or Voluntary Movement.*

At the end of the third week the power to abduct and adduct the shoulder returned. Next, flexion of the elbow, then extension of the elbow, and flexion of the wrist.

Recovery of power in the digits was especially interesting and important. Several days before the movement of the fingers and thumb returned he stated that he felt the power was returning, and that he would shortly move them. The control and exercise of the digits has now attained its optimum in the thumb, which can be slowly flexed and extended, while the fingers as regards extension follow in rapidly diminishing degree; thus, the index finger fairly extends, the middle finger much less, the ring finger hardly at all, and the little finger not at all. As regards flexion, the complication of hypertonia comes in, because the ordinary hypertonia or contracture affects as usual the most paralysed part, and therefore when the digits are flexed the small fingers curl up into the palm, and the wrist, instead of remaining extended, follows suit. The range of movements are shown in the accompanying photographs (Figs. 21 and 22 on plate), taken on April 24th, 1909. The hand assumes an athetotic posture, and the powerful effort made to keep the arm straight out from the shoulder and to extend the digits is well shown by the movement of the latter throwing them out of focus (3 secs. exp.), as well as by the synergic contraction of the face. Flexion of the elbow is easily performed, though slightly flail-like, and the rotation and pronation movements so well, that, as the photograph shows, Hn. can place his hand on the back of the iliac crest. He is able to use the limb as a help in dressing, but made the interesting statement that for two-handed work he finds there is so far a sense of discord between the hands, for example, in holding a cricket bat, that if possible he preferred at present to use one hand. I would only suggest in passing that this may be due to the fact that, as shown by extremely limited lesions of the cortex, the gyri are symmetrically connected with each other, and not heterotopically. The most comprehensive recent investigation of the question of the paths for purposive movement is by Rothmann, who has done so much to elucidate the phylogenetically older paths for the transmission of motor impulses other than by the fibres of the pyramidal tract. It proves that after complete exclusion of the pyramidal paths the arm region of the cortex is in monkeys still excitable, and that isolated movements could be perfectly obtained.

Comparison of the photographs of Hn.'s present voluntary movements with the valuable drawings furnished by Marinesco[26] of two cases of cortex excitation operated upon by Jonnesco will probably convince any one that they are of precisely the same origin. Unfortunately the localization of the gyri operated upon in Marinesco's cases is not certain, nor the extent of the excision, the effects of which were rendered probably more extensive by the ligature of veins.

CONCLUSIONS.

It follows from what has just been said that the case of Hn. proves for man what has already been established by experiments on monkeys—namely, that so-called volitional movements are not alone generated from the brain through the "motor" area or pre-central gyrus, but must also be subserved by other parts. Further, from what has been already said it is reasonable to assume that, in the absence of the pre-central gyrus portion of the arm centre, the function of movement is executed by the representation of the upper limb in the gyrus post-centralis from which the fibres descend to the optic thalamus through the internal capsule. To Rothmann[48] we owe especially the demonstration of the part played in this restitution of function by Monakow's bundle, the rubro-spinal tract, which constitutes the large primitive efferent tract between the basal ganglia and the spinal cord, and further that by reason of its constituting an axial point in the path of nerve impulses ascending from the cerebellum to the mesencephalon and thence descending to the spinal cord, the red nuclear region is clearly the central point of Schiff's middle group of reflex centres. It would be interesting if it were possible to classify the movements which thus return after the complete destruction of the "motor" area. If we turn to earliest observations on this subject the most striking experiment is, of course, that initiated by Goltz, who removed in a dog the cortex and a large portion of the anterior region of the thalamus, and who found that the animal was able to stand and to walk. The same thing precisely is observable in the higher animal, and it has been suggested by v. Wagner that the pyramidal system which for the upper limb means chiefly the giant pyramids, or Betz cells and their fibres, is the part of the cortical efferent system which is reserved for learning new movements, while stock actions, such as progression, and which ought to be regarded as combinations of Munk's "Einzelbewegungen," can be adequately performed by the cerebellum, mesencephalon, and spinal cord acting together. In a general sense this view is probably widely accepted, consequently the pre-central gyrus must be regarded as part of the mechanism whereby new sensory combinations received from either the surface or deep structures of the upper limb are received and integrated.

HYPERTONIA.

The present case affords some opportunity for a study of the condition of hypertonia or contracture, but to which now only the briefest reference can be made.

In a general sense, from the time of Setschenow the higher nerve centres have been regarded as inhibiting

* With the utmost respect for the opinions of the many distinguished writers on this subject who have published instances of lesions in this region, I venture to object to evidence derived from cases of extensive tumour as scientifically not valid for this purpose.

the lower; and in the old sense of the word "inhibition" the higher centres controlled the lower and prevented their physiological activity being displayed. Consequently, if a higher centre were removed and a change in the muscular condition of the part represented followed, it was said to be due to loss of the influence of the higher centres. This crude view of inhibition was never really acceptable, nor did it at all explain the conflicting evidence obtained from clinical records of lesions of the cortex cerebri. This is not the occasion for full discussion of either of these conditions or their theoretical explanation, but it is evident that MacDougall's well-known view of inhibition alone adequately furnishes their interpretation. According to this view also it would follow that the occurrence of hypertonia in the muscles of the upper limb would be present in proportion to the degree to which they severally had lost their cortical representation. That this is the case will have been noticed in the photographs already shown, the hypertonia being most marked in the muscles of the ulnar fingers and diminishing as we move to the other parts of the limb.

Pain.

I cannot leave, also, the consideration of the function of the so-called motor area without shortly discussing the question as to how far pain is represented in the cortex cerebri. It seems to be rather too generally assumed that because the Rolandic region itself can be manipulated and apparently irritated mechanically without giving rise to pain impressions it is not a psychic organ for the conscious appreciation of pain. From an *a priori* standpoint this has always seemed to me somewhat unreasonable, because the rapidity and intensity of the defensive movements which result when a painful stimulus is applied to the upper limb, for example, and, further, the accurate localization in consciousness of the part which is stimulated, all shows that pain is appreciated as such by the same mechanism that co-ordinates conscious movements and the sensory disturbances which immediately precede them. It is, unfortunately, extremely difficult to obtain direct evidence on this subject, because the observations can only be made with certainty on the human being who can describe in terms the painful character of the afferent impulse, and we are not reduced to interpreting motor responses which in a large number of cases are of subcortical origin. The evidence I possess on the question would seem to show that the conscious appreciation of pain in the upper limb is partly represented in the post-central gyrus. Thus, when the temporary symptoms after the removal of the pre-central gyrus had passed off, the conscious appreciation of a point as a painful prick was found to be preserved, and yet after the free removal or destruction of the whole arm centre—that is, of both central gyri—it is notably diminished, though, like all forms of sensation, not totally abolished.* The second point of evidence lies in the very interesting fact that the localization of a painful impulse is topognostically the same as the sense of touch—that, in fact, the diminution in appreciation of a pin prick is similarly subject to a proximal error, exactly as a light touch is. Inasmuch as the reaction of the person to the stimulus, whether tactile or painful, involves conscious appreciation, we can only conclude that a precisely similar cortical mechanism provides for this particular functional activity—that is, that pain is considerably represented in the Rolandic gyri.

SUMMARY.

1. The so-called motor area of the human cortex cerebri is really sensori-motor.

2. The gyrus pre-centralis is in man the seat of representation of (1) slight tactility, (2) topognosis, (3) muscular sense, (4) arthric sense, (5) stereognosis, (6) pain, (7) movement.

3. The gyrus post-centralis is in man part of the arm area in which the sensori-motor representation is of the same kind as that in the gyrus pre-centralis, but in it probably provision for sensorial co-ordination is greater, and that for efferent impulses less.

4. The giant pyramids or Betz cells are not essential for the performance of purposive or voluntary movements.

5. Purposive or voluntary movements can be performed after complete removal of the corresponding part of the gyrus pre-centralis.

* To avoid being misunderstood by any who regard localization of nerve functions as implying a series of closed compartments, I would point out here that not only do the above observations show that the gyrus post-centralis is not the only part of the cortex in which pain is appreciated, but it is clear that a painful stimulus reaching the thalamus may be radiated to any perceptive sensory area—for example, the gyrus pre-centralis, or any other region of the cortex—and so arouse consciousness of the distress.

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ON THE EXTREMES IN MUTABILITY OF SYMPTOMS IN DISSEMINATE SCLEROSIS.

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IT is many years since Dr. Buzzard directed attention to the fact that of all organic diseases of the nervous system disseminate sclerosis is the most likely to be mistaken for hysteria; since then this axiom has received ample corroboration. Although not limited to the early stages of the disease, the difficulties in the way of diagnosis may then be especially perplexing; frequently the indications are vague and only seem to hint at the presence of some indefinite disorder of the nervous system. Absence of characteristic indications, however, by no means constitutes the only difficulty; well-defined symptoms may appear, but they may be abrupt in their onset, erratic in their course, and transient in their duration. They may replace each other with bewildering inconstancy, and after a time may subside and give rise to the impression that manifestations so evanescent are inconsistent with the presence of organic disease. It is with the object of illustrating, on the one hand, the extraordinarily rapid permutations which may occur in the course of distinct indications of organic disease; and on the other, the persistence of such indications for years, followed by their entire subsidence, that I venture to relate in detail the symptoms of two typical cases. In both of them the early appearance of several cardinal symptoms removed any difficulty as to diagnosis.

CASE I.

A married woman, M. T., aged 28, enjoyed good health up to February, 1908, when, in consequence of eating some fish called "hake," which was probably not fresh, she was attacked the same night with severe vomiting and purging which continued through the following day. She was confined to her bed for a week, and on getting up found that she could not walk, and could barely stand. Some days afterwards she had double vision, and a few days subsequently it was seen that her left eye squinted (external strabismus), a condition which lasted about three weeks. She then recovered the use of her legs, and the squinting ceased. For about four months she could walk "on and off" for one, or even two miles, but for some weeks she has been unable to walk at all. About the middle of July she had difficulty in passing water, and on two occasions she passed faeces involuntarily.

I am indebted to Dr. E. T. Larkam for the details of this history, and at his request I took the patient into hospital on August 6th, 1908.

State on Admission.

The patient is a healthy, well-nourished, cheerful woman. She has had no previous illness. There is no history nor indication of syphilis. She speaks perfectly well, without any trace of hesitancy or of syllabic utterance. She moves her arms without difficulty; there is no intention tremor. She can move her legs slightly when in bed, but she can neither stand nor walk. The vision is single, and there is no strabismus. There is no nystagmus even on extreme lateral deflection of the eyeballs. The pupils are moderately dilated and of equal size; they react normally both to light and to accommodation. There is no defect of colour vision, but the patient says that she cannot see as distinctly as formerly. On ophthalmoscopic examination, the discs are found to be pale, but not atrophic. The legs are slightly spastic. The knee jerk is excessively exaggerated on both sides. A lively and continuous ankle clonus can be induced on both sides by slight pressure with the fingertip on the ball of the foot. Patellar clonus is easily obtained on both sides. The Babinski response is of the extensor type, and can also be easily obtained on both sides. The umbilical reflex is absent. Sensation to touch is defective: the patient feels the point of a pin, but below the knees the perception is blunted, whilst above the knees to the upper part of the thighs the pin point is felt almost normally. Perception is again blunted over the lower part of the abdomen, especially on the left side; above the umbilicus it is normal. A firm pin-prick on either hip produced involuntary movements of the corresponding leg. The sensation to heat and cold is quite normal. Sensation in the arms to any form of stimulus is not diminished. The muscular sense is unimpaired.

After-History.

August 12th, ankle clonus was less easily produced; there were slight indications of nystagmus. On the 15th the sensory disturbances had almost disappeared; nystagmus was very obvious. On the 17th sensation was quite normal. The knee-jerk was exaggerated, but neither patellar nor ankle clonus could be obtained. The Babinski reaction was flexor on both sides. Nystagmus was very pronounced. On August 23rd diplopia reappeared without perceptible deviation of the eyeball; it ceased when one eye was closed. On the 24th the patient complained of slight numbness on the left side of the face, which she said "felt drawn." On August 26th the diplopia had disappeared. On the 29th there was slight ankle clonus, on firm pressure, on the right side only. On August 31st both pupils were dilated, and they reacted sluggishly to light and accommodation; the left pupil was rather irregular in shape. Diplopia is again present, and the patient says that she feels sleepy when double vision is present. Nystagmus is still very pronounced. Ankle clonus could be obtained on the left, but not on the right side. The Babinski reaction was extensor on the left side and flexor on the right.

September 3rd, no nystagmus nor spontaneous diplopia, but when the eyes are directed to the left as far as possible the patient experiences double vision. When the object on the extreme left, at which she is looking, is very slowly moved towards the median line, her eyes following the movement, the double vision persists, but if the object is rapidly moved towards the median line the vision at once becomes single. When the movement is slow the left eyeball is seen to lag behind its fellow. The patient complains of "pins and needles" in both hands, most strongly in the right. There are slight indications of ankle clonus on both sides. The patient says that she has a peculiar smarting sensation in the mouth, with a "cold feeling like peppermint" on drawing in the breath. Both smarting and buccal anaesthesia are chiefly towards the left side. Sensation to a pin point is duller on the skin of the left cheek than on the right. The sense of taste is unaltered on either side of the tongue. The reflex of the soft palate is absent, and the voice is somewhat nasal. On September 5th diplopia was present only when the eyes were directed to the extreme left. Evanescent ankle clonus could be produced on both sides, and the Babinski reaction is again extensor on both sides. On September 7th the buccal anaesthesia is the same as on the 3rd; slight nystagmus, but no diplopia is present. Feeble ankle clonus could be obtained on the right side, but none on the left. On September 10th the nystagmus is more pronounced; the buccal anaesthesia is much less and is limited to the left side. On the 12th the nystagmus is absent; the patient can walk about the ward unaided. On the 21st the nystagmus is very slight; ankle clonus is absent, and the Babinski reaction is flexor on both sides; the knee-jerk is still exaggerated. On September 23rd there was a faint flicker of nystagmus; the buccal anaesthesia is quite gone. The patient progressively improved during the ensuing ten days; at their expiration the only physical sign present was the knee-jerk, which continued to be much exaggerated. On October 3rd the patient left the hospital; she was able to walk with ease, and she said that she felt quite well.

On January 25th, 1909, the patient came to the hospital, and said that she felt weak on the left side. She was depressed by the fear of a return of her trouble. The knee-jerk was much exaggerated. Patellar clonus and fugitive indications of ankle clonus could be obtained on both sides. The response to the Babinski reaction was extensor on both sides. The patient could walk fairly well, without spasticity or ataxia.

On February 1st the patient was readmitted. She was very emotional and depressed. The knee-jerk was excessive; patellar clonus, but no ankle clonus nor Babinski response could be obtained. There was no intention tremor nor abnormal speech. On the 6th a lively and continuous ankle clonus was obtained on the left side; on the right it was feeble and transient. The Babinski response was extensor on both sides, but was more pronounced on the left. The patient says that she cannot see any one approaching her on the left side until they are close up to her; on being tested, there was no hemianopsia. The optic discs as previously, were pale. Slight nystagmus was present. After this date all the symptoms gradually subsided, and the patient regained her natural cheerfulness. She left the hospital on March 3rd, 1909, feeling quite well.

CASE II.

P. C. is an unmarried woman, aged 24, who, after undergoing some family trouble, began to have sensations of "pins and needles" in the knees in January, 1904. The legs then became numb, the sensation of numbness slowly spreading upwards as high as the body. Soon afterwards the legs gradually lost power, until in February the patient was unable to get about without help. She then was confined to bed and on two occasions had incontinence of faeces but not of urine. Her condition continued unchanged until August 9th, 1904, when she was admitted into hospital.

State on Admission.

The patient is a well-developed, healthy-looking young woman. She can barely stand and then only very unsteadily; she is quite unable to walk. The ataxia is not increased when the patient closes her eyes. The legs are spastic. There is some lateral nystagmus. There is no intention tremor nor any abnormality of speech. The knee-jerk is greatly exaggerated on both sides. Ankle clonus can be produced on the left side but not on the right. The Babinski reaction is of the extensor type on the right side; it cannot be satisfactorily obtained on the left side. The umbilical reflex is absent. Sensation to the pin point is dulled on both legs, the dullness extending upwards nearly as far as the sternum; on the arms sensation is normal. Sensation to heat and cold is unimpaired both as regards the legs and the body generally. The pupils react to light and to accommodation. The optic discs are pale; on the left side the pallor is more pronounced on the temporal half of the disc.

After-History.

In this case the reflexes varied but little during her five months' stay in hospital, except that on one or two occasions the Babinski response was of the flexor type. The nystagmus varied in degree; sometimes it was very pronounced, whilst at others it could only be developed by extreme deflection of the eyeball. The discs showed no further change. The sensory symptoms varied but slightly. There was never any intention tremor, nor syllabic speech. On one occasion involuntary evacuation of faeces occurred; micturition was sometimes hasty, but there was no incontinence of urine. Broadly speaking, the condition of the patient was unchanged during her stay in hospital. When she left she could neither walk nor stand. She left the hospital on January 21st, 1905, and remained at home in bed until August, 1907, when she began to have power of movement in the toes of both feet. The use of the legs gradually returned, until, in November, 1907, she could walk with aid of support from chairs and other articles of furniture. In March, 1908, she could walk unaided, and has done so since.

She visited the hospital on August 15th, 1908, when she walked without any difficulty, and said that she does not notice anything wrong with her. The articulation was distinct, and there was no intention tremor; nor was there any nystagmus. The knee-jerk was very lively on both sides. There were still some indications of ankle clonus on the right side, but none on the left. The Babinski response was of the flexor type on both sides.

From the clinical standpoint these cases are suggestive: the first of them as regards diagnosis, and the second as regards prognosis. In a doubtful case alternations of symptoms and reflexes, similar to those encountered in the case of M. T., might easily lead to error if the diagnosis were founded on the results of a single examination made at a time when the critical indications are in abeyance and the Babinski response is flexor. The second case warns against dogmatic pronouncement of an unfavourable prognosis without admitting the possibility that the symptoms may subside for a time, even after prolonged paralysis; and it is to be remembered that the remission may last for a considerable period. In both of these cases experience teaches that sooner or later the disease will return.

Instances in which remissions and variations of the symptoms have occurred in the early stage of disseminate sclerosis, followed by their partial or complete disappearance for months or years, are by no means uncommon; but I have not been able to find any record of equally rapid and repeated interchange of many of the cardinal symptoms of the disease, such as occurred in the first of the preceding cases. Seeing that the physical signs which characterize the disease are determined by the occurrence of multiple sclerotic patches dispersed over the central nervous system, it is difficult to explain the erratic disappearances and returns of indications thus produced. *Post-mortem* investigation of the morbid anatomy of disseminate sclerosis is seldom obtained in any but advanced cases, when the symptoms have been progressive and continuous for a considerable time; under such conditions the anatomical changes are usually distinctive and well marked. In the primal stages of the disease, the nature of any focal changes are little more than conjectural.

The pathogeny of disseminate sclerosis is obscure. The antecedent conditions which have been suggested as possibly causal are so numerous and so diverse as to discredit their direct etiological relationship. In many instances it is quite possible that the alleged causal factor has exercised an influence on the development of the disease by depressing the systemic powers, and thus favouring the onset of symptoms previously quiescent and unnoticed, although the morbid processes were probably latently in progress. The patient. M. T., attributed her illness to the fish she had eaten, which doubtless produced a sharp attack of gastro-enteritis; but there is no convincing evidence to show any direct relationship between the poisoning and the sclerosis. P. C. attributed her illness to severe mental strain caused by family trouble. This again, would only act as a developing agency.

The view most in favour at the present time is that disseminate sclerosis is due to the action of an unknown, autogenous toxin. Although not universally accepted, it is probable that the toxin acts by setting up changes in the ultimate vascular supply of the parts affected. These changes comprise thickening of the vascular walls with the formation of thrombi in the minute vessels. In the first instance the nerve tissue of the parts affected undergoes softening, with fatty changes in the cells and destruction of the nerve sheaths. A marked peculiarity in the morbid anatomy is then apparent; a considerable number of the axis cylinders persist and traverse the degenerated patches. The ganglion cells are frequently unaffected for a considerable time, though surrounded by partially-sclerosed tissue.

It is no easy matter to suggest a reasonable explanation of the way in which the ebb and flow of the symptoms in cases of disseminate sclerosis is produced. No single explanation will suffice to account for the inordinately variable duration of the abnormal reflexes—a duration that in some cases can be estimated by hours, whilst in others it involves months or even years. In the consideration of this question the anatomical changes in the brain and cord first claim attention. There is little doubt that many of the denuded axis cylinders continue to transmit impulses, although their conductive capacity is liable to fluctuations and interruptions of external causation. Temporary pressure from alterations in volume of the closely surrounding degenerating islets through which the nerve fibres pass is sufficient to impede or interrupt conduction; and as the alterations in volume are the result of recurrent evanescent changes in the walls of the minute vessels which supply the part, the degree of pressure will fluctuate. Again, many foci of degeneration are probably rapidly developed and are infinitely small in their inception, and yet they are capable of setting up temporary waves of disturbance through the surrounding areas, which for a time will derange the functional activity of the implicated nerve fibres. But inasmuch as the disturbance is not attended by any recognizable physical change, it will quickly pass away and function will be resumed. Subsequently, however, the areas thus affected may permanently succumb to the characteristic degenerative processes.

The rapid alternations in the Babinski response which occurred in the first case are scarcely to be explained on purely mechanical grounds. It is more probable that responses so immediately contradictory were due to the direct action of a toxin on the nerve cells. During adult life, and in the absence of certain special conditions, the extensor response to the Babinski test is generally accepted as affording evidence of organic disease of the nervous system. The exceptions comprise meningitis, post-epileptic stupor, certain stages of typhoid fever, some states of coma, and even ordinary sleep, in all of which the extensor response has occasionally been met with in individuals who otherwise yield the normal response. In addition to these conditions of internal relation, it has been found that the administration of certain narcotic drugs develops the extensor response in healthy subjects, whilst other narcotics fail to do so. The drug which produces the extensor response the most frequently is scopolamine. Volkmann[1] found that it almost invariably occurred in morphine-scopolamine narcosis. Kutner[2] observed it in 3 cases after the injection of 0.5 to 1 mg. of scopolamine. Link[3] obtained it in 37 out of 43 patients who had received injections of scopolamine in doses varying from 0.4 to 1.2 mg. The extensor response was usually obtained in from fifteen minutes to one hour; in one instance it occurred two minutes after the injection was administered. The inverted response often persisted for several hours. In the narcosis produced by morphine or by ether the skin reflexes of the foot disappear. During the inhalation of chloroform the extensor response may sometimes be obtained at a certain stage of narcosis, after which it quickly disappears. Most frequently it is absent throughout the whole period of administration. Goldflam[4] noticed that the extensor response produced by scopolamine quickly disappears when chloroform is administered.

Various theories have been propounded to explain the occurrence of the extensor response in scopolamine narcosis. Kutner[5] is inclined to attribute it to temporary damage to the lateral paths of the pyramidal tract; or possibly to an intensification of a pre-existing weakness in these paths. Goldflam considers that the normal plantar reflex is a cortical reflex. If the reflex-arc is interfered with at any point beyond the posterior roots down to the origin of the anterior roots, or if the cortex is functionless, the plantar stimulus develops a purely spinal reflex by way of the posterior roots and collateral branches to the spinal centre for the extensors of the toes.

The view that the extensor response in scopolamine

narcosis is due to temporary exclusion of the cerebral cortex from the reflex circuit is difficult to reconcile with the absence of any such effect during the narcosis produced by many other drugs. Link suggests that this objection may be met on the hypothesis that some narcotic drugs possess specific properties in addition to their general narcotic action. Illustrative of this are Finkelenburg's[6] observations that the injection of cocaine into the spinal canal leaves the reflexes unchanged; whilst if stovaine be injected, the deep reflexes first and subsequently the skin reflexes are abolished. Even in the rare instances of stovaine narcosis, in which the tendon reflexes are increased, the Babinski extensor response never occurs. The selective power of modifying the spinal reflexes thus shown to be inherent in some drugs affords a possible clue to the manner in which the variations in the symptoms were produced in the case first described. The drug produces very decided results, but they are limited to the effective period of each dose; when the influence of the drug passes off, the reflexes revert to the normal type. Assuming that an autogenous toxin is the causal agent by which disseminate sclerosis is developed, it may be further assumed that, in the early stages of the disease, the toxin is produced intermittently, and that it may derange the function of the implicated nerve structures before any recognizable anatomical changes are produced. Such disturbance of function would occur in waves corresponding to the intermittent evolution of the toxin; and being merely a "functional disorder," would subside as each batch of toxin was exhausted. Under such conditions, the rapid oscillations in the symptoms and reflexes would be accounted for.

The course of the symptoms in the second of the two cases is in marked contrast with that observed in the first. Instead of rapid interchanges between the symptoms and their entire subsidence in a few months, was comparative constancy and prolonged duration with paralysis extending over years. This is suggestive of physical changes, and yet the paralysis, along with the other symptoms, vanished. Cases of this kind point to the possibility of regenerative processes taking place in organically damaged areas. The lengthy persistence of the symptoms and abnormal reflexes with ultimate recovery is scarcely explicable on any other hypothesis. That the disease will eventually recur and be progressive is, unfortunately, more than probable; meanwhile, the symptoms have been in abeyance for upwards of twelve months.

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A CASE OF CONVULSIVE TIC.

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THE following case is perhaps of sufficient interest to warrant publication:

L. S., a boy, aged 11, had always been considered robust and healthy, and had no illness, except measles when he was a year old. His general characteristics were those of an unusually intelligent child of a somewhat serious disposition. His father and mother are healthy; they have two younger children, both healthy. There is no history of epilepsy nor insanity, nor of any grave nervous disorder in the family of either parent.

In May, 1907, he suffered from chicken-pox. During this illness the mother noticed that he occasionally jerked his head to one or other side, and sometimes also jerked his arms about. This was thought to be St. Vitus's dance, and little attention was paid to it, although it persisted.

Early in January, 1908, the boy came under observation suffering from acute otitis media. Examination of the ear was rendered difficult by the restlessness of the patient. The head was constantly and forcibly jerked towards either shoulder, generally the right, whilst the head was rotated with the chin towards the opposite shoulder. These movements were often accompanied by a sudden, loud hiccoughing sound or a sharp, squeaking cry. The arms were frequently thrown outwards into the abducted position, or forcibly extended as though the patient were striking at something. More rarely the arms were folded across the chest. The power of speech was unaffected, and the patient could walk well, the leg muscles being unaffected.

On February 3rd, 1908, he developed a severe attack of scarlet fever complicated in its later stages by suppuration in several cervical glands. During the period of severe illness the spasmodic movements never entirely ceased but were not much in evidence.

In April, 1908, when he had got over his other troubles and was beginning to go about again, the spasmodic movements became more marked and certain new phenomena appeared. The facial muscles were affected by spasm, leading to various grimaces accompanying the other movements of the head. Extremely forcible sniffing movements of the nostrils, accompanied by a sharp and deep inspiration, were frequent. The trunk muscles were more generally affected, leading to various irregular, forcible twisting movements of the body. The legs were sometimes forcibly extended as though the boy were kicking at something. He could still walk, but often had a difficulty in starting, as spasms of the leg muscles caused a series of preliminary jumps and kicks.

In July, 1908, explosive utterances, both inarticulate and articulate, became prominent. Hiccoughing sounds were the most common, but sounds imitative of dogs, cats and pigs were heard. Exclamations such as "dash!" "bosh!" "go on!" and "damn!" were shouted, often with wearisome persistency. These exclamations usually, but not always, accompanied the other muscular spasms. The power of co-ordinate movement was not interfered with, except at the actual moment of a spasm. The boy could dress himself, feed himself, write and practise the piano. He could drink from a full glass of water without spilling any, provided the glass was not upset by preliminary flourishes of the arm in the effort to grasp it. During sleep there were no unusual movements.

Since July, 1908, the condition has varied in severity from week to week, but on the whole has steadily got worse.

At the present time (February, 1909) the boy is in good physical condition, and is stouter and stronger than he was six months ago. There is no evidence of organic trouble in any of the systems, nor in the organs of special sense. The only abnormality noted has been a slight exaggeration of the superficial and tendon reflexes.

The spasmodic movements are extremely variable, very irregular in character, and of very constant occurrence, though occasionally the boy may be perfectly still for an hour or two. As instances of the force of the spasms, he has broken a fairly strong plate in two whilst holding it in his hands, and often tears his clothes or wrenches off buttons whilst dressing or undressing. He often bruises himself with his clenched fist.

His power of walking is now often interfered with, progression being made by a series of jumps. Sometimes, however, he can walk fairly well, except for an occasional kick with either leg. The worst feature is now the loud and incessant shouting, making life intolerable for the boy and his parents, and constituting a serious nuisance to neighbours.

His exclamations now include such words as "bloody" and "buggar." These occur not only as loud shouts accompanying spasms, but also in ordinary conversation interspersed with the other words. The boy says he does not want to use these words, but that they come to his tongue, and he must say them. He often repeats any observation made to him, in part or in whole. Generally one or two words are repeated several times, more rarely a whole sentence. When reading to himself, he may suddenly shout out a word or a part of a sentence.

He has frequently been heard to give involuntary expression to what is passing in his mind. For example, whilst thanking a comparative stranger for a small gift, he has suddenly shouted, much to his own confusion, "I don't think much of this, it's not much good."

The boy's moral character has also changed. Formerly particular about his personal appearance, he now takes no pride in being tidy, and says it is too much bother to wash and brush himself, and so forth.

He has become very irritable, especially with other children, and whilst previously very obedient, he is now ready to resent interference. If he be reprimanded about anything, the result is a severe attack of shouting and jumping, perhaps lasting for an hour or two. No mental obsessions have been apparent so far.

From the foregoing account it is evident that this case is an example of convulsive tic of the particular variety known as "Gilles de la Tourette's Disease." There are present:

1. The rapid, forcible, arrhythmic, and involuntary contractions of various muscles or groups of muscles, including those of phonation and respiration.
2. Explosive utterance, articulate and inarticulate.
3. The use of bad language—"Coprolalia."
4. The repetition of words or phrases—"Echolalia."

The results of treatment have, so far, been unsatisfactory. Modified Weir Mitchell treatment produced no benefit. A prolonged change to a quiet country place was without good effect. Drugs of various kinds, including strychnine and arsenic, have been of no avail. Bromides produce a temporary improvement, and a small dose has been given nightly for some weeks past, as otherwise the boy gets almost no sleep, and there is consequently no rest for any other member of the household. An attempt has been made to keep the boy occupied, and to interest him in reading, drawing, music, physical exercises, etc. Whilst so occupied he is often comparatively quiet, but the period of quiescence is usually followed by a severe attack of spasms and shouting.

The most noteworthy feature of this case appears to be the occurrence of this malady in a strong and otherwise healthy boy, in whose family no history of nervous disease can be obtained.

THE RELATIVE ADVANTAGES OF CATHETERIZATION AND OPERATION IN THE TREATMENT OF PROSTATIC ENLARGEMENT.

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During the last ten years the operation of prostatectomy—which had previously fallen into disrepute—has been revived, owing largely to the advocacy of Mr. Freyer, who has published long lists of successful cases; and it is now accepted as the routine method of treating all sufferers from enlarged prostate. Signs are not wanting, however, of a coming revulsion in favour of a less drastic treatment, namely, the habitual use of the catheter. There are, apparently, two principal causes for this:

1. The serious nature of the operation, and the existence of doubt as to its after-effects, both immediate and remote.
2. The good results obtained from sterile catheterization.

I.

The operation of prostatectomy is severe and the mortality, even with modern improvements, is not less than 10 per cent., and would be far higher if every case throughout the country were recorded. It necessitates prolonged confinement to bed; six weeks would not be overstating the time required for convalescence, and six months must elapse before the patient's health and strength are completely established. Moreover, it is usually performed when the expectation of life is not long, and the sacrifice then of six months, part of which is spent in considerable discomfort, is a matter of consequence. Finally, there remains the all-important question that has never been answered as far as I am aware, What is the proportion of complete cures of those who survive the operation? Innumerable records have been published of the condition of patients six weeks or two months afterwards, but with the exception of 32 cases recorded by Mr. W. G. Richardson,[1] no statistics are forthcoming of the state of those same cases at the end of two years or more.

From my experience, both in regard to patients on whom I have operated and those I have seen after prostatectomy by other surgeons, as well as from isolated reports furnished by friends, I have no hesitation in saying—and I believe this will be corroborated by others—that, brilliant as this operation sometimes is, it does not invariably relieve patients of their urinary troubles, and sometimes ends in miserable failure. During the last few months I have collected particulars of the following cases:

A large phosphatic calculus removed a year after prostatectomy.
Two cases of suprapubic fistula.
One case of great irritability of bladder both by day and night, as bad as or even worse than that caused by partial retention.
One case of vesical haemorrhage.
Four cases in which the urine was still septic.

I cannot say, of course, whether these cases had been reported as successful or not; yet they suffice to prove that a proportion of patients passing out of the surgeon's care continue to suffer from urinary troubles. Until it is clearly proved that comparatively few suffer from after-troubles we should not too lightly advise a patient to submit to prostatectomy. In the successful cases the patient is freed once and for all from the ties of catheter life, which is a very great advantage and appeals strongly to very many.

II.

In the alternative treatment—the habitual use of the catheter—there is little or no danger to life, and no 10 per cent. mortality to face, provided sterility is maintained. The patient after two or three days' rest, while learning the art of sterile catheterization, is able to resume his ordinary occupation. His health is not in any way impaired by long confinement; in fact, a general improvement begins directly the bladder is emptied and he is relieved of the nocturnal frequency. With the exception of having to use the catheter two, three, or four times in the twenty-four hours for the rest of his life—the premium he pays for escaping operation—he has nothing to fear.

This statement will be challenged, for everyone has seen the terrible local and constitutional symptoms which more often than not follow the use of the catheter. But those symptoms, the manifestation of cystitis and similar inflammatory processes, are due to sepsis alone; and since they occur so frequently after instrumentation, the inference must be that the micro organisms have gained access to the urinary passages by the agency of such instruments, and therefore that the preparation of the catheter, or the manner in which it has been introduced, is at fault. If, in the past, disaster has attended the use of the catheter, then it is time that some more efficient method of sterilization should be adopted, for success or failure depends entirely on this point. If it is possible to maintain sterilization with certainty, then it appears that catheter life is preferable to operation in the majority of cases of prostatic retention.

The introduction of soft gum elastic catheters into this country some seventy years ago greatly benefited those who used them, but they also rendered the problem of cleanliness more difficult. The old-fashioned metal instrument, with its brightly polished surface, was more readily cleaned and did less harm on that account than the painless and easy-passing soft catheter, with its cotton or silk foundation coated with layers of varnish. The same danger exists to day; chemical antiseptics, now so universally employed, will possibly sterilize the metal, but certainly not soft instruments, for the rough and oil-sodden interior alone offers to the micro-organisms a safe harbour against all chemical action for an indefinite time. Soft instruments prepared in this way cannot be safe, and their use for the treatment of prostatic retention will end sooner or later in failure—that is, in contamination of the urine or tissues. India-rubber catheters are as bad, for though the lumen is not rough and the material offers less protection to the organisms, yet they swell under the influence of grease, become sticky, lose their polish, and moreover require much fingering on account of their extreme flexibility.

The easiest and safest method of producing sterility is by boiling every instrument in water, and in my opinion catheterization as a method of treating prostatic retention is not given a fair trial unless this precaution is taken. There are, however, certain other points which must be attended to, if success is to be attained:

The lubricant must be boiled and applied mechanically, and not with the fingers.

The catheter must be introduced with a minimum amount of handling; certainly the first 4 in., which pass through the prostate, should never be touched.

The fingers of the operator and the orifice of the penis must be scrupulously clean.

These few details the patient must learn before he can be trusted to relieve himself with the catheter. In order to demonstrate what may be accomplished by a systematic use of the catheter sterilized by boiling, I venture to record the cases which have come under my care during the past year. The results are not perfect, for the limitation of the use of the catheter has not been reached, and improvements in the method can and will be achieved in the course of time, yet they indicate that a man may lead an active life in comfort, even if he is compelled to use a catheter, and may live to a very ripe old age without the terrible symptoms which have been witnessed in the past. All are living at the present time. The youngest patient is 46 and the oldest 96. The average age is just under 70. The longest time for which the catheter has been used is forty years, and the average of the series seven years. Most were septic when the treatment began, very often with foul urine and grave constitutional symptoms, and all invariably improved rapidly, as the records show.

The list is divided into three classes:

(*a*) Those who have recovered the power of natural micturition after treatment.

(*b*) Those who pass their water partly naturally and partly by the catheter.

(*c*) Those who have to rely on the catheter alone.

In the first two classes the gradual fall in amount of the residual urine in some instances is worthy of note. The bladder seems to regain its power to some extent under the influence of regular catheterization (Cases III, IV, V, VI, etc.). For example, the residual urine may be 12 oz. at first, and after a week or two it will fall to 6 or 7 oz., or even may

disappear altogether (Cases I, II). This may be explained either by a decreased resistance in the prostate, caused by a lessening of the congestion in that part, or by a regaining of muscular power, owing to the bladder having been systematically relieved of a load which it had carried for so long—that is, the muscle recovers its power, having been relieved of the strain of a constant burden; whereas, if the weight remained, the muscle would gradually grow weaker, and more urine in consequence would accumulate.

In some cases the prostate has increased in size, or, if not actually in size, at any rate the enlargement of the glands within its substance has pressed increasingly upon the urethra, and has raised the resistance, and thereby the natural power has been lost or very much impaired; the patient is therefore compelled to rely more and more on the catheter (Cases IX, XIII, XVII, etc.). But in no case has the increase given rise to any of the serious difficulties or inconveniences so frequently attributed to it. A large prostate does not necessarily produce symptoms; it only does so when it interferes with the function of micturition. Most men have some enlargement (which begins at a very much earlier age than is suspected, for the same changes may be noted in the glands of the comparatively young man as occur when disease is well established after middle life), and the condition may never be discovered. The best results, in that the patient has not had anything to complain of, are naturally obtained by those who have never been infected—that is, patients who have adopted boiling water as the sterilizing agent from the beginning, and it is this class which offers the best chance of the bladder regaining its powers. Nevertheless, septic cases have done exceedingly well, and the fact that no less than 16 out of these 20 cases were septic when first seen is a strong argument in favour of the contention that the ordinary technique connected with instrumentation is sadly deficient.

A.—*Those who have Recovered the Power of Natural Micturition after Treatment.*

CASE I.—L. L., aged 62. Urine passed naturally four to five times in twenty-four hours, and is healthy. The prostate is large, soft, and round. For five or six years patient had indications of commencing prostatic trouble. In October, 1905, I saw him with Dr. Lush, of Hampstead, when he had retention; his bladder was greatly distended; catheterization was very difficult, and accompanied with severe haemorrhage. The difficulty was overcome, and he continued, after being taught, to use his catheter at first three times, then twice, then once, a day, and, finally, as he could empty his bladder completely, it was discontinued. Since the beginning of 1906 he has passed the instrument once a month to make sure that he cleared the bladder. In December, 1908, he had retention, and was relieved. He has no trouble whatever.

CASE II.—R. W. E. (C 274), aged 64. The urine passed naturally five or six times in the twenty-four hours, is healthy, and the prostate full, round, and elastic. I saw him with Dr. Harold. He complained of nocturnal incontinence, and there were 10 oz. of residual urine. Catheterization was performed regularly three times a day, and at the end of six months he could empty his bladder by his own efforts.

B.—*Those who Pass their Urine Partly Naturally and Partly by Catheter.*

CASE III.—N. B. (C 236 S), aged 46. Catheter has been used for three years twice in twenty-four hours; urine passed naturally two to three times; it is clear; the prostate small and firm. He commenced in 1906 to pass the catheter in the ordinary way, and did so twice daily. Troubles soon began—pain, irritability of the bladder, fever, etc., and he was strongly advised to submit to prostatectomy. To this he objected, and in February, 1907, learned to sterilize and pass his catheter properly. The residual urine (8 or 9 oz. in amount, which up to this time was foul) gradually improved, and is now about 6 oz. He is in good health, and actively carries on his business.

CASE IV.—M. L. (C 341 S), aged 62. Has used catheter twice in twenty-four hours for nine months, and passes urine which is nearly clear three to four times in twenty-four hours; the prostate is large and round. For six months previously he had passed his catheter occasionally without any aseptic precautions. Ten days before I saw him he had done so, and was just recovering from a severe attack of fever associated with irritability of bladder, pain, and straining. The urine was thick and offensive, and the residuum was fully 2 pints. He rapidly improved under sterile instrumentation three times a day, and has now regained, to some extent, the power of natural micturition, and uses his catheter twice in the twenty-four hours to clear the organ. He is doing well.

CASE V.—J. O. (C 362 S), aged 62. Catheter has been used four times every twenty-four hours for three-quarters of a year. Urine passed naturally once or twice in twenty-four hours, it is very slightly cloudy; the prostate large, round, and elastic. I saw him with Dr. Sheldon, of Notting Hill, in September, 1908. He had been troubled with frequency of micturition for two and a half years, but never had any treatment. While staying from home in August he had a catheter passed to relieve retention. Rigors and fever followed the introduction, the urine became foul, and his general health began to suffer. Dr. Sheldon taught him to pass a sterile catheter four times a day, from which time he made an uninterrupted recovery. At first the residual urine was 2 to 3 pints. It is now 18 or 19 oz., and he can pass a little naturally. He is in excellent health.

CASE VI.—J. W. (C 206 S), aged 65, has used catheter twice in twenty-four hours for three years. Urine passed naturally two to three times. At present it is a little turbid; the prostate is large, elastic, and uniformly enlarged. He began to use the catheter habitually once a day in February, 1906, but without any antiseptic precautions. His condition rapidly got worse, and in consequence of the foul state of his urine was advised to wash out the bladder, likewise without any regard to cleanliness. By August of the same year his condition was so bad that he was compelled to rise eight or nine times in the night, and could only hold his urine from five to fifteen minutes while moving about in the day. Natural micturition was associated with intense pain and straining. He had frequent attacks of high fever, and was totally incapacitated from following his occupation of a blacksmith. The urine was stinking. He was strongly advised to have the prostate removed as the only means of saving his life. He, however, learnt to pass the catheter properly and rapidly recovered, and is now quite well and strong.

CASE VII.—E. F. (B 158), aged 65, has for nine years used catheter four to five times during twenty-four hours, passing a little urine naturally occasionally, its present condition being cloudy; the prostate is small, round, and firm. For the first four years of catheter life he took very inadequate precautions against sepsis, and consequently the difficulty in instrumentation increased. In 1904 he had severe attacks of cystitis, and a phosphatic stone formed which was removed by lithotrity. Afterwards he was more careful, but still not sufficiently so, and he had slight chronic cystitis, with occasional haematuria, and also some irritability of the bladder, necessitating the too frequent use of the cathether. During the last two months he has commenced to carry out a proper system of sterilization, with the result that the catheter already goes more easily, and is less frequently required.

CASE VIII.—N. B. (B 289), aged 66. Catheter used for four years, about twice each twenty-four hours, and he relieves himself naturally three to four times; the urine is cloudy; the prostate is large and regular. The first symptoms of enlarging prostate occurred in 1900, and from that time until 1904 he relieved himself occasionally by means of a catheter whenever retention threatened. In May of that year, being from home, he was catheterized at hospital, where the instruments had been prepared by soaking in a strong solution of perchloride of mercury. No urine was withdrawn, and he was told that there was no retention. However, during the evening, when he had returned to his home, his symptoms became so distressing that he was forced to seek advice. The penis, and especially the mucous membrane, was then so swelled and congested that a catheter could only be introduced with the greatest difficulty, and notwithstanding repeated trials the retention was not relieved. Suprapubic cystotomy was therefore performed, but he declined prostatectomy. The prostate was of the exciseman's inkstand or os uteri class. He rapidly recovered from the operation. At first he passed all his urine by catheter, but gradually the bladder regained power, and he is now only using it twice a day. He is exceedingly energetic, and travels much on the Continent. I saw this patient with Dr. Crowdy of Highgate.

CASE IX.—B. F. (C 192 S), aged 67. Catheter has been used for three years three times in twenty-four hours, and he passes urine naturally two to three times a day; it is clear; the prostate is large and round. Previous to 1906 this patient had a good deal of urinary trouble. In that year I removed a phosphatic calculus of moderate size, and Dr. Clayton of Hampstead taught him to use the catheter, which he has done ever since, though rather more frequently recently, as there is an increase in the residual urine. He is quite well.

CASE X.—A. B. P. (C 286), aged 71. Catheter has been used for two years once in every twenty-four hours; urine passed naturally four to five times; it is normal; the prostate is moderately enlarged. I saw him with Dr. Evans of Weybridge. He had great frequency at night, which disturbed his sleep. Since using the catheter he has no trouble, and the residual urine has diminished from 11 to 7 oz.

CASE XI.—R. G. (C 254), aged 72. Has regularly catheterized himself twice a day for two years and passes urine three or four times; it is slightly cloudy; the prostate is round and full. He was formerly troubled with frequency both by day and night, also occasional incontinence and pain in the peritoneum. There were 12 oz. of residual urine, and a small stone of uric acid and oxalate of lime, which was removed by lithotrity. He had one mild attack of cystitis, owing to carelessness in the preparation of the catheter. I saw him in consultation with Dr. Harold.

CASE XII.—E. W. P. (B 166 S), aged 73. For seven years catheter has been used three times in twenty-four hours, and he micturates naturally two to three times; it is clear; the prostate has not been examined lately. Symptoms of prostatic retention commenced in 1897, but he did not use the catheter until 1903, when there were about 8 oz. of quite clear residual urine. At the end of the year he had a sharp attack of cystitis, afterwards he adopted aseptic precautions and has had no trouble since.

CASE XIII.—W. H. (A 416 S), aged 76, has catheterized himself three times in each twenty-four hours for five years, very little urine passing naturally. The urine is clear, and the prostate is large and round. Lithotrity was performed twice—April, 1897, and November, 1904. The first stone was pure uric acid, the second had a thick coating of phosphates; for five or six weeks previously he was advised to employ a catheter to withdraw 4 oz. of urine, which he did in a most careless manner without being taught. Cystitis naturally resulted. After the removal of the stone and proper instrumentation, he rapidly recovered and remains well.

CASE XIV.—G. C. (A 308 S), aged 78, has for fourteen years used catheter once in each twenty-four hours, urinating naturally three to four times; the prostate has not been examined recently. For many years he has had attacks of retention relieved by the use of the catheter. Urinary troubles invariably followed (cystitis, haemorrhage, and grave constitutional disturbance). Fourteen years ago he commenced habitual catheterization, and two years later adopted strict asepsis and has had no complication since. He was an old patient of the late Sir Henry Thompson.

C.—*Those who have to Rely on the Catheter alone.*

CASE XV.—F. S. P. (B 380 S), aged 63, has used catheter for seven years four times in each twenty-four hours. The urine, none of which passed naturally, is nearly clear, and the prostate was large and full. In November, 1902, he was in a very serious condition, with frequent rigors and a temperature varying from 100° to 104°. His tongue was dry and coated. Incessant distressing and ineffectual calls to pass urine with much pain. Instruments had been used recently for purposes of examination. There were 60 oz. of residual urine, which was thick and foul. Prostatectomy was urged upon him as absolutely essential; but he preferred to try treatment, with the result that he is now quite well, bicycling, walking, etc.

CASE XVI.—Dr. L. (C 312 S), aged 72. Catheter has been used three to four times each twenty-four hours for two years. No urine passed naturally; it is clear; the prostate large and soft. He adopted strict aseptic methods from the commencement and has never had any trouble.

CASE XVII.—G. D. L. (B 351), aged 73, for seven years has used catheter three times in every twenty-four hours. Urine clear but none passed naturally; the prostate is firm and extending upwards. He has boiled his catheter from the first. The prostatic urethra is long and offers some resistance to the catheter. At first he used it twice, but recently three times, a day, and has lost the power of micturition entirely. He is in excellent health and full of activity.

CASE XVIII.—G. W. P. (C 31), aged 77. Catheter used for seven years three times in every twenty-four hours; urine clear, none passed naturally; the prostate is large and round. He was properly taught to use the instrument by Dr. Beaumont of Norwood. At first he employed it twice, but recently, as the prostatic resistance increased, three times a day. He has sugar and albumen in the urine, and, with the exception of slight haemorrhage on two or three occasions, has remained well.

CASE XIX.—Dr. D. (B 170 S), aged 86, for nine years has used catheter three to four times in every twenty-four hours. Urine slightly cloudy; none passed naturally. Fourteen days before I saw him he had used a catheter night and morning; this produced greatly increased desire to micturate, pain, difficulty with the instrument, and slight fever. The urine was thick. Under proper aseptic treatment he gradually improved, and now, notwithstanding his age, is very well.

CASE XX.—A. M. (A 85 S), aged 96, has used catheter for forty years four times in every twenty-four hours. Urine nearly clear, though none passed naturally. An old patient of the late Sir Henry Thompson. Previously to 1902 he was much troubled with stricture and could only pass a No. 5 catheter to withdraw the urine, which he used five times in twenty-four hours. He had many troublesome attacks of orchitis, fever, urethral discharge, and other complications which frequently confined him to bed. In the latter part of that year he had an attendant to prepare his instruments by boiling, and he has had no complications since; even the stricture has yielded, and he can now employ a No. 7 with comfort. He is in wonderful health considering his advanced age.

The question, "When should prostatectomy be advised or undertaken?" has still to be considered. I am entirely opposed to the practice of operating as soon as the gland is found to be abnormal, and before any marked symptoms have arisen. The enlargement has been detected very probably by rectal or cystoscopic examination, and it is contended that its immediate removal, while the patient is in good health, will prevent troubles hereafter; this deduction appears to be based on insufficient evidence, for a large number of men go to the grave in advanced years with an enlarged prostate, which has never given any trouble, nor has its existence ever been diagnosed.

Prostatectomy should not be undertaken unless the symptoms present are definitely ascertained to arise from that organ, and from nothing else. Urinary symptoms are very frequently attributed to the gland when in fact they come from quite a different cause. For instance—and this, perhaps, is the most common mistake—a patient complains of occasional retention, haemorrhage, pain, etc.; a rectal examination is made; the prostate is found to be enlarged and is straightway accused, without further search, of being the cause of the trouble. What is the result? During the operation for removing the offending member a stone is found in the bladder, which could easily have been removed by lithotrity and the patient restored to health in a week, whereas he is now condemned to pass through an unnecessarily severe ordeal. In skilful hands the x rays will nearly always eliminate such errors, even when the sound has failed to reveal the true cause.

Prostatectomy should be deferred until after treatment by catheter has been tried. The patient may recover his power, or he may decide, when he knows exactly what to expect, to continue treatment. No harm can come of a delay of a month or more, and in septic cases much good will result, for the patient will improve and be in a better condition to bear the operation. Afterwards, if the catheter fails or is found too irksome, recourse can be had to operation.

When the patient is comparatively young, in good health, and has many years of life before him, operation is very rightly advocated as soon as it is proved that catheter treatment will not cure. The same may be said of those who, owing to their position in life, calling, or lack of funds, are unable to carry out the few simple details necessary in sterile catheterization. Prostatectomy undoubtedly is the best treatment when the prostate, by its mere size, has largely encroached upon the bladder space, and there is no residuum. The urine is clear and free from all signs of sepsis, yet the patient has constant and urgent calls to pass water both by day and night. Finally, the operation may be necessary in certain cases where the prostate is constantly bleeding and filling the bladder with clot which interferes with instrumentation and endangers the patient's life.

REFERENCE.

1 *The Development and Anatomy of the Prostate Gland*

HOME CONDITIONS AND EYESIGHT.

BY KARL PEARSON, F.R.S.,

FROM THE GALTON EUGENICS LABORATORY, UNIVERSITY OF LONDON.

IT may not be without interest, in view of recent criticisms of a memoir by Miss Barrington and myself,* to publish some further determinations of the relation of home conditions to sight.

Before doing so it will be well to point out one or two important considerations which I think have considerable bearing on the manner in which statistics ought to be collected, having regard to the medical inspection of school children, which is now becoming universal.

The first point I would insist upon is that careful distinction must be made between (*a*) home environment and (*b*) school environment.

Our paper dealt chiefly with the influence of home environment on both refraction and acuity of vision. Now, as far as I am aware, the only material hitherto available for testing the influence of the actual *home* conditions on the presence of eye disease, on the goodness or badness of vision, or on shortsightedness, is that provided by the report of the Edinburgh Charity Organization Committee, where we have for the first time the sociological report on the home conditions placed alongside the ophthalmological report on the child's eyes, and accompanied in each case by the age of the child. I do not see how it is possible without such information to draw conclusions as to whether the home conditions do or do not affect sight. I am quite prepared to be shown that the conditions in Edinburgh are exceptional, but the proof can only be given when the children who are reported on elsewhere are followed up into their homes, and the state of these is recorded, as in the Edinburgh investigation.

Further, the Edinburgh material was of special value, because there is not the same extraordinary mixture of racial types in that city which is to be found in Glasgow or London. We are told, for example, that Russian Jews

* *Eugenics Laboratory Memoirs.* V, A First Study of Vision and of the Relative Influence of Heredity and Environment on Sight. Dulau and Co. 1909.

have in London a very high percentage of eye defect. Any one who has studied the copious statistics of Randal must be convinced that the degree and extent of myopia is markedly a *racial* character.* Those who have investigated any local class in this country know that in anthropometric characters it is usually significantly differentiated from any other local class. The population of our suburbs is usually more sedentary than the population in the working class districts of the town itself and less mixed.

I know, as a matter of fact, that the cephalic index of school children varies very sensibly from one district of London to a second. On this ground alone it is not possible, without control measurements, to assert that, because the percentage of eye defect varies from Whitechapel to Hampstead, the result is due to home environment. It may be so, but a mere statement of percentages in different districts without (*a*) age distributions, (*b*) racial proportions, and (*c*) percentages of defective parents in each district, will not convince those who desire logical statistical proof before forming any conclusion. It is well known that the defective parents also gravitate to the worst districts, and we may expect the defective children there also. For these reasons the work at Edinburgh was especially valuable. It gave age distribution, it dealt with a racially fairly homogeneous material, and it followed up the children into their homes and told us something, if not all we might desire to know, about their parents. I see no other way in which a real solution could be obtained for London. An individual school or two must have all—not only the defective—children examined, and the eyesight report must be accompanied by a sociological report.

A report such as that of Dr. A. Hugh Thompson on the London school children, in which the numbers at each age of both the normal and the defective children are not given, cannot help the statistician in the least to arrive at definite results. Nor, unless the children are followed into their own homes, is it even possible to say how far bad food, bad air, or parental neglect may account for the presence of any disease. There is always the diathesis as a contributory source, and the fact that all the children in the same family may not be attacked, shows that the variability within the family also plays its part.

Again my critics will, I hope, pardon me if I say that I am not convinced when I am asked whether this or that "is not a fact." For example, that it is a fact that in the better homes the children are more studious, or that the more respectable parents keep their children at home. Either may be the truth, but what we want are actual numerical measures of the effect of these supposed causes in invalidating the apparently small influence of the environmental as compared with the hereditary factor.

What we want are more data before we conclude that results are paradoxes because of such or such an explanation being "a fact" or "a matter of common experience."

Let us attempt to get any information we can on the problem of whether the better class parents keep their children at home, and so their offspring are more studious and suffer more from myopia.† Now, I know of no statistics which at all touch this point of the studious character of the offspring of better class parents, but I suppose the argument to be that the children are kept more at close work and that this damages their sight. Now, it would be possible to compare the sight of children of the same age who came to school at different ages originally, and thus find out whether those who began to read earlier have markedly worse sight. It would be very desirable to collect statistics *de novo* on this point. The only material that I know of bearing on the subject is that used by Miss Barrington and myself, and provided by Cohn, who gives the correlation tables of sight and years of school life, and sight and age. We have shown that the relationship is more intimate between sight and age than between sight and years of school life, and that, considering the high correlation of years of school life and years of age, the latter is most probably only a derived result of the former. Now, we have recently reworked Cohn's data and discovered the correlation between the ages at which the child began to read and the degree of myopia *at a constant age*. The partial correlation co-efficient is:

0.04, if age and length of school life have a correlation of 0.8.
0.13, if age and length of school life have a correlation of 0.9.

Now it will be, perhaps, said that the latter is a quite sensible correlation, but compare it with the heredity correlation of 0.40 to 0.60, and we see that environment is quite overmastered by heredity. *Furthermore, the correlation is the wrong way, the later the child went to school, the worse at a given age is the myopia.* I have little doubt that the correlation in this case is sensibly *zero*, or the age at starting reading has little influence on the result. Cohn's statistics are, of course, not final, but they are very suggestive, because they have hitherto been supposed to prove the exact reverse of what is really extractable from them.

I now turn to the question of the effect of good or bad home environment on disease of the eye. I will consider first corneal nebula and illustrate by some of the percentages:

Feature of the Home Estimated.	Boys.		Girls.	
	Good.	Bad.	Good.	Bad.
Economic condition	3.6	2.3	3.9	2.2
Overcrowding	2.5	3.3	2.5	3.4
Physical state of parents	3.8	2.5	3.1	2.8
‡Moral state of parents	3.5	2.5	2.5	3.5
Means	3.35	2.65	3.00	3.00

Now it is extraordinarily difficult to lay any stress on results whose differences are of this order. A bad moral state of parents would be interpreted to mean less corneal nebula for the boys and more for the girls, the percentages being just reversed. Good economic conditions in both boys and girls would mean 1.5 per cent. more of the disease, and so would the good physical condition of the parents. In such circumstances what stress can be laid on the 0.8 per cent. difference between crowded and non-crowded homes? The only safe conclusion to be drawn is that in Edinburgh at least there is no *marked* relationship between corneal nebula and bad home environment. The curious point is that if we take *all* diseases of the eye and eyelid, we appear to get a slightly more definite, but still a quite negligible relation between disease and home environment. A difficulty is whether to include strabismus or not; the correlations have been worked out by Miss E. M. Elderton, of the Eugenics Laboratory, including and excluding "squint." In each a positive correlation means that there is more eye disease with the worse home condition.

Feature of the Home Estimated.	Boys.		Girls.	
	With Squint.	Without.	With Squint.	Without.
Economic conditions	0.10	0.14	−0.03	0.02
Overcrowding	0.05	0.08	0.04	0.12
Physical state of parents	−0.02	−0.02	−0.10	−0.15
Moral state of parents	0.04	0.03	−0.01	0.01

Now, it is quite impossible to lay any stress on these results. Six out of the 16 show less disease with worse home conditions, and if we have positive correlations of 0.10 and 0.14, we have negatives of −0.10 and −0.15. Further, no correlation of this kind lying under about 0.25 can be really considered to have definite importance. How very different they are from the values running from 0.4 to 0.6 found in our memoir for the inheritance factor!

It is worth while putting on record here the quantitative contributions of refraction and diseases of the eye in producing defective vision. The refraction results are taken

* The Jews, like the Germans, are largely brachycephalic, and the increasing brachycephaly of the town populations is a point not without suggestiveness for changes in eyesight.

† The reader of our memoir will remember that our conclusion was, *not* that the better homes produced more myopia, but that there was no *marked* relationship between bad homes and defective sight.

‡ This category should a priori be considered the most important one in this matter. It marks essentially neglect of the children. Where the home is practically a brothel or the parents habitual drunkards there can be no proper cleanliness or care of offspring.

from our memoir; the disease results have been recently worked out by Miss Elderton.

Correlation of Keenness of Vision with Refraction and with Disease.

	Keenness of Vision and Refraction. (Contingency.)	Keenness of Vision and Disease.	
		Squint Included.	Without Squint.
Boys ...	0.58	0.36	0.21
Girls ...	0.54	0.50	0.32

It will be seen that, if we exclude strabismus, the diseases of eye and eyelid do not produce half the effect on vision that refraction does.

Now I do not intend to argue for a moment that the Edinburgh data provide the final word in these matters, but they form the first solid attempt to provide information as to the influence of home environment. Neither the school medical officer nor, as a rule, the teacher can follow the children into their homes. All that has hitherto been done has been more or less plausible guesswork as to the relation of home environment to the health and intelligence of the child. I shall not be surprised to find, when further data are available, that the nation has for years been putting its money on "Environment" when "Heredity" wins in a canter. To say this is not to discourage all attempts to better defective sight in the schools or to check the intensification of myopia. But it would be foolish—in face of our increasing degeneracy—to neglect the possibility that only other methods can in the long run hinder the spread of defects. Better qualities, such as keen and strong vision, are no longer an absolute requisite for survival, and defectiveness, instead of meeting the stern judgement of Nature, is by governmental and charitable agencies supported to multiply its kind. The curative art in its tenderness for the individual may be disastrous for the race, unless it realizes fully the relative biological importance of heredity and environment.

MEDICINE OR SURGERY IN EARLY CASES OF CANCER.

BY SKENE KEITH, M.B., F.R.C.S.EDIN.,
LONDON.

AT the present time surgery claims the treatment of all early cases of cancer, and allows an experiment only when it has failed. I hope to show a fair case for medical treatment on an early case, after extensive experience gained by experimenting on hopeless ones has apparently rendered this permissible. I do not for one moment suggest a prolonged course of treatment in any suitable case for operation, but one limited to a few weeks only. When a case presents itself where the diagnosis lies between cancer and syphilis, it is considered good practice to clear up the diagnosis by giving antisyphilitic treatment—in other words, to experiment to a certain extent; and this brings me to the point I wish to make, why, as surgery is not altogether satisfactory, not experiment for two or perhaps even three weeks. This is, of course, allowable only after encouraging results have been obtained in hopeless cases. If this length of time would make any appreciable difference to the prospects of permanent recovery, if operation had eventually to be had recourse to, it would be a very serious matter to suggest such delay; but if the disease is growing so rapidly as to show much difference in that time, the case would be one of those in which return is certain to be rapid.

When an experiment has been carried on, it has always been difficult to say if there is any real improvement. All who have much experience with malignant disease know that a certain amount of temporary improvement can be gained in many different ways. If one can show that some definite change is caused by cancer, and that this change can be arrested by treatment, it seems to be reasonably probable that a right line for farther investigation has been arrived at. I believe that it is possible, perhaps probable, that the change which takes place in the blood in all cases of cancer when at all advanced may prove the guide which is wanted. The changes are not confined to one element; the red corpuscles are diminished in number except when there is pressure leading to starvation, and are altered in appearance, being weak and more or less colourless; the haemoglobin is diminished; the white cells are increased in number, and are altered relatively, the polymorphonuclear cells being increased at the expense of the lymphocytes.

If a careful blood examination were made before every operation for cancer it might, and probably would, show that the cases in which there was no return were those in which the blood was normal or nearly normal, or where it quickly returned to a healthy condition after operation. As examination of the blood after operations shows in some cases a gradual return to a normal condition of the white cells, it is apparent that once the local disease is removed, the general condition it had caused may right itself. It is therefore reasonable to advise after all operations for cancer the treatment my brother and I recommend, or any other which has the effect of materially improving the condition of the blood, even when the actual disease is present. There is not sufficient information to enable one to say how quickly the blood should become normal after the whole of a cancerous growth has been removed; but as an illustration of what may happen I give the figures of a case in which the patient became, exceptionally quickly, well and strong after two abdominal operations.

The history was that a colotomy had been performed, followed by the excision of about 9 in. of the transverse colon. My brother saw the patient for the first time on November 4th, 1908, seventeen days after the second operation. He made a blood examination, and found 4,400,000 red and 30,000 white corpuscles per cubic millimetre. As no blood count had been previously made, we do not know if there had been any improvement in the seventeen days. There were 78.1 per cent of polymorphonuclears and 21.2 per cent. lymphocytes. Treatment was begun at once. On November 25th the white cells numbered 15,000, and there were 68.8 per cent. of polymorphonuclears, showing that while the percentage was within the normal limit, the number of polymorphonuclears in the total quantity of blood was roughly half as many as there should be. On March 7th, 1909, the number was 8,000 and the percentage 66, the total number of the polymorphonuclears being thus normal. The red cells had been in excess since the end of November, the count always being over five millions. On May 4th the number was 9,000 and the percentage 67, again within the normal limit. The treatment consisted in fifteen injections, each containing soamin 1 grain, green citrate of iron and ammonium 10 grains, and saturated solution of sodium cinnamate 20 minims. The treatment was finished by the end of December.

Examinations made at intervals after operations might show that the disease was returning before local evidence could be made out. This would not of necessity upset the local theory of the disease, as there might be return internally.

If we take the condition of the blood as a starting point for treatment, we see at once that no one remedy is likely to bring it back to normal, and we must give remedies which will increase the number of red cells, and the amount of haemoglobin, while the white cells are reduced, and the relative numbers of the polymorphonuclears and lymphocytes are put right.

My brother and I have now been working for six years with practically the same remedies. They are arsenic, iron, and sodium cinnamate, all old-fashioned cancer remedies. The preparations we have found best are soamin, green citrate of iron and ammonium, and a saturated solution of sodium cinnamate. Soamin is sodium para-aminophenyl arsenate, and contains 22.8 per cent. of arsenic. Whether these remedies should be given together or separately we are not certain.

Beginning any new line of treatment, one must naturally limit oneself to hopeless cases, to those in which the death sentence has been passed. This is only fair, but after six years' experience with such cases and with the knowledge gained by their study, and more especially when treatment can be placed on a scientific basis, and when certain failure can be seen within a very short time by its want of effect on the blood, surely the time has come when one cannot be accused of great rashness when one advises treatment which is capable of correcting the condition of the blood caused by a cancerous growth, in an early case, and provided always that treatment will not complicate operation should it be necessary later. I was exceptionally fortunate in meeting with an early case lately

before the white blood cells had become altered, and where a radical operation was not possible.

In the middle of last January I was sent for by Dr. Leonard Brown of Pau to see a gentleman 59 years of age. Dr. Brown had diagnosed the presence of an epithelioma of the rectum, and this was confirmed by Dr. Diriart, who advised that a radical operation was impossible on account of matting together of tissues in front of the rectum, and advised colotomy. The growth was confined to the front and left side of the bowel. I entirely agreed with the diagnosis. The patient was anxious to come back to London, and it was agreed that treatment should be commenced as soon as possible, and that the question of colotomy be left open.

The examination of the blood was very encouraging, as, though the red cells numbered only 3,000,000 per c.mm. and the haemoglobin was 70 per cent., the white cells were normal. The injections were very badly borne, as they were usually followed by violent sickness lasting sometimes for an hour and a half. The blood quickly became normal. The treatment extended over a period of nearly two months, seventeen injections being given. The growth entirely disappeared, leaving on the left side a small pucker. The patient also gained very considerably in weight. One is so thoroughly imbued with the idea that cancer can only be cured by operation, that I naturally began to be doubtful about the diagnosis, and wrote Dr. Brown to ask if he or Dr. Diriart had even a shadow of doubt on the subject, and received the reply that neither of them had any doubt whatever.

It may be said that one case does not prove anything, and with that I agree; but the case is interesting when taken along with others in which the altered condition of the blood in advanced cases has been modified by injections of iron, arsenic, and cinnamate of sodium.

The blood should be examined in all cases of cancer, and especially when any treatment is being carried out. At present it is our only guide, and time alone will show if it is a thoroughly reliable one.

The following extract from a letter received from Dr. Taves of New York, dated April 20th, 1909, is of interest as showing the practical benefit which may be derived, though the blood examination was not carried out, as I had only recently written him about it.

I began the injections recommended by you on October 1st last on a case of carcinoma of the stomach. The patient was a man, aged 74, suffering from vomiting, epigastric pain, and a loss of 20 lb. in weight. The tumour was *visible*, measuring about 4 in. across and 2½ in. from above downward. Since being put on the injections he has gained 12 lb. in weight, has no pain, vomits only very infrequently, and the tumour has decreased more than one-half in size. He is able to enjoy life, and goes to his business every day.

Another case, a man of 40, has carcinoma of the oesophagus. He could not swallow even water. The obstruction was demonstrated by bismuth paste and the *x* ray. As he was starving, a gastrostomy was done for feeding purposes, and then he was put on the injections. He has gained a few pounds in weight, and is now able to take by mouth two quarts of milk, several eggs, and two platefuls of cereals per day. He is stronger, has no pain, and seems to be getting along fairly well.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A CASE OF LANDRY'S PALSY.*

LANDRY'S paralysis is a rare disease in Bombay. The following notes of a case may therefore be interesting:

Jan Mahomed, a Mohammedan from Cutch-Mandvie, aged 60 years, without occupation, was admitted into hospital on April 19th, 1909. He was a well-developed and well-nourished man. He lived on a mixed diet. He had syphilis eighteen years ago; he did not drink, but smoked moderately.

The present trouble began with tingling and heaviness of the legs and difficulty in walking. He felt exhausted on walking slight distances, and once he fell down while walking. Since then the legs have become very heavy. A few days after this he felt heaviness of his body and weakness of the left arm. Four or five days before admission he was not able to move his legs and left arm.

I saw him in the out-patient department for the first time on April 19th, 1909, that is, eighteen days after the commencement of the illness. He then had paralysis of both legs and of the left arm, but there was no wasting, nor any loss of sensation. Knee-jerks were absent; Babinsky's sign was not present; there was no marked incontinence of urine and faeces. The cerebral functions were perfect; there was no ocular trouble, neither was there any loss of cutaneous reflexes. The vessels were atheromatous, and there was a history and evidence of chronic bronchitis. The spleen was enlarged. There were strong evidences of syphilis—scar on the penis, enlarged lymphatic glands, and swollen tibia. He was admitted with the diagnosis of disseminated myelitis.

The next day paralysis of the laryngeal muscles and weakness of the right arm came on; there was also some weakness of the diaphragm, as indicated by impaired movements of the abdominal walls. Within the next forty-eight hours the respiratory muscles became paralysed, there was dyspnoea and orthopnoea, and great restlessness. He got worse every day, the paralysis affecting all the respiratory muscles as well as the muscles of the neck. His mind was clear to the end, and swallowing and speech were unaffected. He was taken home, five days after admission, in a dying condition. He had no fever all along, except that the temperature was 99° F. on the first day.

The diagnosis rested on the following factors; (1) Rapidly advancing motor paralysis with very little involvement of the sphincters; (2) absence of wasting and the other trophic lesions; (3) absence of fever.

The points of interest in this case were: (1) Landry's palsy generally occurs between the ages of 20 and 30, but the patient under my observation was 60 years of age; (2) at first the case was difficult to diagnose, but later on, when the paralysis spread with such uniformity, as is noted, it was easy to diagnose.

FRAMROZE N. KAFADIA, L.M.and S.,
Honorary Assistant Physician, Sir J. J. Hospital, and Tutor in Medicine, Grant Medical College, Bombay.

* Read before the Bombay Branch.

AN EASY METHOD OF REMOVING THE NAIL OF THE GREAT TOE BY COMPRESSION.

IN the treatment of ingrown nail the ordinary operation of erasion is undoubtedly a method of barbarism. There are many variations and I am surprised that the following method has never been suggested.

I shall describe my last case. A commercial traveller, aged about 40, had suffered for some months with ingrown nail of the great toe. On its inner side it was inflamed and suppurating. First of all I applied a compress of lead and opium for twenty-four hours. Then a tape was tied round the root of the toe till it produced intense congestion. Then I took a large Péan's forceps with long parallel blades, and compressed the nail in the middle of the inner half with moderate firmness. A check as to the amount of compression can be introduced between the handles so as to prevent excessive pressure. Much less force is required than would be supposed. Then the toe was again wrapped in lead and opium lotion for three days. Then the inner part of the nail was found discoloured and loose, so that it was easily removed with the scissors without any bleeding save a few drops from the root of the nail.

In all, I have removed the great toenail five times by this method. The force applied need not be great, and if it produce no result (which I have never found) it can always be applied again. In one case a young lady applied the pressure herself, as she would not permit me, and it was successful. In another case, where the toe was very inflamed and very tender, and the patient was afraid of the process, which I had explained, I applied the blades very slightly, not expecting any result but just to give him courage so that I could apply it more firmly next time. To my surprise the result was perfect. Previous to this I had used much greater force.

Next, as to the place of application, it is better not too close to the edge of the nail. In my first attempts I applied it quite close to the edge, causing very free bleeding and not producing a dark, contused appearance, but a thin white line along the compressed part. To give the best results the force, I find, should be applied to the middle third of the half of the nail on the side affected. No anaesthetic is necessary. Lead and opium lotion I found better than cocaine.

PETER TYTLER, M.D
Manchester.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

YORKSHIRE BRANCH:

Dr. Gordon Black, in the Chair.

Scarborough, Saturday, June 26th, 1909.

Ascites and its Operative Treatment.

Dr. Ram (Mexboro') read a paper on this subject.

The patient, a married woman, aged 46 years, came under his observation twelve months ago. She was complaining of feeling of weight and distension of the abdomen, which she attributed to dropsy. On examination he found that the abdomen was dull right up to the umbilicus and in the flanks. There were present both visible and palpable waves. The liver dullness extended from the fifth intercostal space in the nipple line to about 6 in. below the right costal margin. The spleen was enlarged and came down to about 3 in. below the costal margin. The diagnosis of cirrhosis of the liver with ascites was made. She was tapped, and 2½ gallons of fluid were obtained. She had been tapped previously at intervals of six to eight weeks, and the fluid obtained varied from 2 to 2½ gallons. Her trouble began two years before she was sent to Dr. Ram, and during this time she had been tapped several times. He tapped her again on July 30th, 1908, when fluid to the amount of 2½ gallons was obtained. Operation was done on September 1st, 1908. The abdomen was opened through the right rectus, the incision, 6 in. long, being made extending from a point 3 in. below the umbilicus. The omentum, which was found crumbled up and already adherent to the bowels, had its anterior surface rubbed and stitched up to the parietal peritoneum round the umbilicus, and on either side of the incision. The anterior and outer surfaces of the liver were rubbed with gauze, as well as the parietal peritoneum opposing these surfaces. A drainage tube was put in the middle line 2 in. above the pubes. The wound was closed in three layers. On the tenth day the tube and the stitches were taken out, the wound having healed by first intention.

The woman had not been tapped for the last ten months. There was no fluid present. She was doing her usual housework.

The President congratulated Dr. Ram on the excellent and detailed manner in which he had given his paper and on the happy result of the case. Mr. Sinclair White had had 6 cases in which similar treatment had been carried out; 4 of these were cured and 2 died. Some authorities asserted, however, that operation in cases of this kind only hastened death. Probably a large proportion of cases operated on were not really true cirrhosis. He would not operate in any case where there was jaundice. Sometimes draining the peritoneum had appeared to cure in these cases. Dr. Churton mentioned that he had heard of cases operated on by puncture being followed by death. He deprecated drawing away the whole of the fluid at one time. Dr. Ram replied.

Congenital Fusion of Bones of Arm.

Dr. Murray (Scarborough) showed a boy with congenital fusion of the bones of the arm—radius and ulna—at their upper ends, near the elbow. Also a radiogram of the condition. Dr. Hunt (Scarborough) remarked that the humeral articular surface was also probably not properly developed.

Transient Multiple Arthritis apparently Due to Injection of Streptococcus Vaccine.

Dr. Churton related the following case:

The patient, a man aged 28, was admitted into the Leeds General Infirmary on March 29th, 1909. On March 13th, he was engaged for many hours removing snow. Next day he had retention of urine. March 15th: Urine dribbled away; bladder found distended; catheterism was necessary. Cystitis followed. March 24th: Sudden paralysis of left leg, with partial anaesthesia from knee downwards, followed by wasting of all the muscles of the limb. Right leg normal. Violent tremors and fascicular twitchings of left leg, worse under observation, occurred soon after admission. April 21st: Signs of pyelitis in left kidney; temperature, 103°. Urotropin and acid sodium phosphate given; hot fomentations eased the pain. April 22nd: Streptococci found in the urinary pus; 5 million of a streptococcus, obtained by culture from an empyema, and kept in readiness, injected. April 25th: Great improvement. May 5th: Slight relapse; temperature 100°, pulse 96. Vaccine repeated. May 9th: Temperature and pulse normal. May 26th: Still a slight deposit of pus in the urine. A third dose of vaccine was ordered. By mistake a polyvalent vaccine, made elsewhere, containing 25 million of dead organisms, and said to be prepared from several varieties of streptococci of great virulence, was used. Next day, May 27th, return of pain in left kidney; increase of pus in urine; pain in right knee. May 28th: Left knee painful and very hot. May 29th: Left wrist swollen and painful, very tender; skin red, mottled. Apparently the inflammation was among the tendons, and around rather than inside the joint. Temperature 102°, pulse 108, respirations 24. No rigors; patient dejected, sallow, and weak. Another flask of the polyvalent vaccine had been proved to be sterile. May 30th: Salicylate of sodium was given. June 1st: Dose of salicylate increased to 20 gr. every two hours for four doses, afterwards every four hours. June 3rd: Joints greatly improved; temperature normal, pulse 84. June 5th: Salicylate every eight hours. June 10th: No visible deposit in urine. June 15th: Salicylate omitted. The improvement in the left leg had not been interrupted; sensation was perfect; movements of toes, etc., good.

Probably the number of organisms injected on the last occasion was too great, and some of their endotoxins too strong for this comparatively mild case. The reaction in or around the joints was such as might well have resulted from an invasion of rheumatic cocci and toxins, helped into life and activity by an auxiliary poison; and the effect of the salicylate, in sufficient doses, was striking; but the patient had never suffered from rheumatism. There was no discoverable reason why the two knees and the left wrist should have been affected severely, and other joints not at all. The President thanked Dr. Churton for his paper.

Unusual Diseases of the Heart.

Dr. T. Wardrop Griffith (Leeds) showed some specimens of unusual diseases of the heart. Two specimens were from patients who during life had the symptoms of the morbus caeruleus, and both presented imperfect development of the pulmonary conus with imperfection of the interventricular septum. Two specimens illustrated the rare condition of disease limited to the pulmonary valves. One of these was from an alcoholic who had hepatic cirrhosis, and developed symptoms of infective endocarditis; the disease was confined to one segment of the pulmonary valve, which presented a redundant mass of vegetations. The other was an exceptionally rare condition, namely, pulmonary stenosis, apparently the result of disease, and not congenital. The patient, a girl of 18, had had chorea two years prior to her admission, and the signs pointed to pulmonary stenosis, though there was no cyanosis. She died from acute miliary tuberculosis. The other valves were normal, the interventricular and interauricular septums were complete, and the duct of Botalli was closed. The pulmonary conus was well developed, and the individuality of the mutually adherent valves was not lost. Dr. Griffith inclined to the view that the condition was acquired and not congenital. A child of 6 months was admitted with bronchopneumonia; there was a well-marked systolic bruit at the apex, transmitted to the posterior axillary line, and associated with some signs of cardiac enlargement; she succumbed to a second attack three months later. The heart was enlarged, and the incompetence of the mitral valve was found to be due to disease confined to the posterior segment of the valve, which was shortened, thickened, and opaque. There was also thickening and opacity of the endocardium of the posterior wall of the ventricle. In this case Dr. Griffith expressed his doubts as to whether the condition was congenital or the result of disease, and he inclined to the former view. The last case was that of a man of about 40, who was admitted with acute pulmonary symptoms of a month's duration. There was marked dullness with tubular breathing; this cleared up in great measure. At the time of his admission there were signs of old cardiac disease, there being incompetence of the aortic valve. Symptoms of infective endocarditis then supervened, and the patient died. There was found old puckering of the aortic valves, with an aneurysmal dilatation of one of the sinuses, pointing, it was thought, to a former attack of infective endocarditis. There was very extensive recent endocarditis, with large masses of vegetations. The inflammation had extended through the pars membranacea septi, and a mass of vegetations extended into the auriculo-ventricular aperture of the right side of the heart. There were many recent embolic areas in both lungs. The sequence of events was supposed to be (1) endocarditis, possibly infective, leading to the aortic insufficiency and to the aneurysmal condition of the sinus of Valsalva; (2) an attack of acute pneumonia; (3) infective endocarditis, pneumococcic in origin, involving the damaged aortic valve; (4) extension of this through the interventricular

septum; and (5) embolism of the lung from the fungating mass in the right auriculo-ventricular aperture resulting from this extension. It was interesting to note that the auriculo-ventricular interval as measured by a study of the venous pulse in the neck was normal, and, in this connexion, that the extension of the endocarditis was above the level of the band of His. The PRESIDENT thanked Dr. Griffith for the facile way in which he had addressed them on his subject. Dr. CHURTON also discussed the paper.

OPERATION FOR TRAUMATIC MENINGEAL AND CEREBRAL HAEMORRHAGE.

Dr. SOLLY (Harrogate) related a case of successful operation for traumatic meningeal and cerebral haemorrhage which he had treated in conjunction with Dr. Riley Watson, of Harrogate. The main points of interest were that the patient, a lady aged 38, was knocked down by a bicyclist, and, though more or less conscious for some hours after the accident, gradually became comatose, with dilatation of the right pupil and contraction of the left, restless movements of the right arm, and apparent paralysis of the left. On trephining, the bleeding was evidently from a posterior branch of the middle meningeal, near the base of the skull. A large clot, about 2 fluid ounces, was removed from between the skull and the dura mater, but the bleeding point could not be reached, although the trephine opening was enlarged by rongeur forceps to a size of about 2 in. by 1½ in. The bleeding was eventually arrested by two strips of gauze. As the dura mater bulged, showing great internal pressure, it was incised, and a considerable quantity of sanious arachnoid fluid spurted out to a height of about a foot; and as the brain substance protruded through the slit in the dura, a fine pair of artery forceps were pushed into it in the direction of the lateral ventricle. Through this opening some cerebro-spinal fluid escaped with portions of dark clot. The patient's respiration and pulse had evidently improved upon the relief of pressure, but it was not thought possible to do any more, so the wound in the dura being stitched up with fine iodized catgut (prepared by Claudius's method), the scalp wound was closed with silkworm-gut suture, and the two strips of gauze brought out through a fresh incision through the lower part of the flap. The gauze strips were withdrawn about eight and twenty hours respectively after operation; there was a good deal of oozing, but no serious haemorrhage, and recovery was almost unattended by any incidents of surgical interest. The patient recovered consciousness in about thirty-six hours, and after forty-eight hours was perfectly intelligent, though apt to be restless and excitable for the first ten days; for about three weeks she had some diplopia, but gradually recovered from this. The wound was acutely tender for about ten days, and headache was much complained of. It was relieved by doses of aspirin and bromural. The patient was allowed out of bed after two weeks, and at the end of the fourth week could walk about the room without dizziness, and recovery now (five weeks after accident), appears to be complete.

ACUTE INTESTINAL OBSTRUCTION IN A CHILD.

Dr. SOLLY also related a case in which he was called in to see a child, aged 6, with acute intestinal obstruction, symptoms of which had been present for four days before the family medical attendant was called in to see the case, and aperients had been freely administered without any result except the excitation of vomiting. When seen the patient was very much distended, and upon opening the abdomen a loop of small intestine was found strangulated under several bands of adhesions in the neighbourhood of the caecum and appendix, although the latter appeared perfectly free and normal. Great apparent relief was given and the bowels acted spontaneously about eight hours after the operation, but sickness continued, and a rather sudden fatal collapse occurred about twenty-four hours after operation, no *post-mortem* examination being obtainable. It was found upon inquiry that, when about a year old the child had suffered from what was diagnosed as intussusception, and the question of operation was considered. As the symptoms subsided and the child, though "subject to indigestion," had had no further acute trouble, no operation was done. The case was reported as an object lesson in the treatment of acute abdominal complaints in children, for it seemed probable that had a simple exploration been made at the time of the first illness, the diagnosis of intussusception would have been corrected and the child probably saved from the return of the trouble, in which the intestine failed to extricate itself so fortunately as it might be supposed to have done the first time.

Reports of Societies.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Friday, July 9th, 1909.

Mr. PRIESTLEY SMITH in the Chair.

Cataract Pedigrees.

MR. N. BISHOP HARMAN showed some new cataract pedigrees, illustrating the truth of Mr. Treacher Collins's contention that the cataract was a defect in the lens secretion, which went to make the capsule. The patients had plaques on the back part, behind the nucleus, and including the posterior part of the lens. In one girl the cataract extended so as to include the nucleus, while in a further case it projected forward, like a piece of coral, through the lens, so that it seemed there was lens matter bulging through. At first he thought it was so, and that it had been needled, and afterwards got hard and sclerosed.

Radium Treatment.

Mr. ARNOLD LAWSON and Mr. MACKENZIE DAVIDSON read a preliminary note on the treatment of eye diseases by radium. Mr. Lawson said the cases had been selected from the out-patient clinic of Moorfields Hospital, and were selected as instances of maladies which usually proved obstinate or only improved slowly under the ordinary forms of treatment, or else were of an active and virulent nature and so required drastic measures. Only 17 cases had so far been tried, but in every case the result of exposure to radium had been very encouraging. Most of the cases were corneal ulcerations, 4 were non-ulcerative lesions, and 1 was episcleritis. After one application of five minutes to a hypopyon there was distinct benefit. For instance, a man, aged 35, gave a history of injury to the right eye. There was deep ulceration and a grey infiltrated area of 4 mm. diameter, with a large hypopyon. Twenty-nine milligrams of radium were applied for five minutes, and five days later the injection was subsiding and the hypopyon had disappeared. Two days after a second application of three minutes the man was discharged from the hospital, the eye being not quite white, but, for all practical purposes, well. Other cases also did very well from the treatment. In all cases the only other measures were boracic lotion and atropine where required. Some punctate erosions were also similarly treated, and gave equally encouraging results, as did also cases of old-standing trachomatous pannus, except in one case, in which there was increased vascularity after the treatment. The dosage of radium was an important point, and the small dose of 5 mg. seemed to act as quickly as did a much larger quantity. In one case the pain after the application endured for three days, but in the others the longest time was twenty hours. Mr. Mackenzie Davidson explained that the paper was a tentative one. The radium was applied in sealed glass tubes, the glass cutting off the alpha rays, so that the beta and gamma rays only passed through to the lesion.

The Nettleship Medal.

The CHAIRMAN then, in a graceful tribute, presented to Mr. Edward Nettleship the Nettleship medal for his work in ophthalmology, and Mr. NETTLESHIP replied, paying a high compliment to the many coadjutors who had helped him to complete the pedigrees on which he had been working.

Colour Perception.

Dr. EDRIDGE-GREEN showed a new spectroscope, which enabled him to isolate any portion of the spectrum and determine without calculation the size of any patch which seemed monochromatic to any person.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

Tuesday, July 13th, 1909.

Mr. WARRINGTON HAWARD, President, in the Chair.

Treatment of Sarcoma by Bacterial Toxins.

DR. W. B. COLEY, of New York, in an address on this subject, said that it was now seventeen years since he first suggested and practised the injection of cultures of the *Streptococcus erysipelatosus* as a treatment for malignant tumours. The basis of his work was the undoubted occurrence of retrogression in, and disappearance of, inoperable sarcomatous growths as a sequel of attacks of erysipelas. Scientific support was forthcoming later when the experimental work of Beebe and Tracy at the Huntington Cancer Research Laboratory showed that multiple sarcoma in dogs frequently disappeared entirely under treatment with the mixed toxins. His first successful case was inoculated in 1884 with a living culture of the streptococcus for a round-celled sarcoma of the jaw; the patient remained free from all signs of the growth and quite well in 1891. He treated in all 12 cases by this method, but was obliged to give it up, partly because two deaths occurred as a result of the infection, and also because he was not invariably able to produce an attack of erysipelas. Nevertheless, he noticed that some inhibitory action was evident even when no definite attack was induced, and this first gave him the idea of a possible toxic action. Then some work at the Pasteur Institute upon the increase of virulence exhibited by the streptococcus in the presence of *B. prodigiosus* suggested the combination of cultures of the latter organism with those of the streptococcus, and it was with this "fluid" that nearly the whole of his earlier work was done. Of 38 cases known to him in which erysipelas, accidental or inoculated, occurred in the course of sarcomatous disease, 23 were benefited; of these 17 were sarcomata, 7 were cured, and 10 "improved."

When the toxins were first used the two organisms were grown together; a two weeks' culture was sterilized, a small piece of thymol added, and the material used without filtration. As a result of his observations he came to the conclusion that, in some cases at least, the *B. prodigiosus* had an inhibitory action of its own, independently of its association with the streptococcus. Hence the next development of the treatment, which consisted in growing the organisms separately and standardizing the cultures before mixing in definite proportions. By this means it was possible to eliminate the earlier severe symptoms, since the dose could be regulated.

The effect of an injection upon a tumour was to render it paler, no doubt as a result of decreased vascularity; then, after about three doses, to diminish the fixity. Softening set in, and finally the tumour, in favourable cases, disappeared by absorption, or by liquefaction and necrosis in the round-celled and more vascular growths.

Not for every case, by any means, could it be claimed that the tumour would disappear altogether, but in some, degeneration did lead to complete absorption. Melanotic types derived no benefit from the injections. It was immaterial where the inoculations were made, whether into the neoplasm itself or into the tissues at a distance.

The explanation he had to offer for what might seem anomalous results, he found in his conception of the essential nature of all malignant growths; he looked upon all tumours, of whatever type, as of microbic origin, and therefore susceptible to natural and induced immunity. He believed there were many analogies between sarcomata and such a condition as bone tuberculosis; some surgeons believed that the latter was invariably a sequel of trauma, and in his experience the same held true for very many sarcomata, whatever might be the case with other neoplasms. His results were to be explained by the induction of an environment unsuitable to the cancer cell, which degenerated in consequence. It would easily be understood that the unsuitability attained might be enough to give the malignant cells a temporary set back but not enough to produce a permanent effect. An examination of the blood after inoculation always disclosed a marked leucocytosis.

There were experimental observations tending to show that the response of cancer cells to slight changes in nutritional conditions were very delicate. For example, a variety of mouse-tumour which could be transplanted freely among Berlin mice could not be transplanted from mouse to mouse in Denmark, and presumably the only difference was some small divergence of diet.

The results of treatment with the mixed toxins varied from absolute failure to brilliant success, the determining factor seeming to be largely a question of dose. The amount given must be adapted to the individual response of the patient, and failure to show rapid improvement need not lead to discouragement. One case of sarcoma of the parotid with metastases in the neck, which showed no improvement after one month, after seven months he was able to report as a cure; the tumour had entirely disappeared and the patient remained well seven years later. He alluded also to the case reported to the society by Major Spencer earlier in the session.

In cases of sarcoma of the extremities where it was a question of amputation, the toxins should be given a chance first, but unless signs of success were forthcoming in at the most three weeks, operation should not be further postponed.

One of the most important uses of the toxins was as a prophylactic measure after operations, particularly for sarcomata, but there was no reason why an inhibitory effect should not be exercised in the case of carcinomata, and he believed it was. He had some 20 cases in which recurrence was to be expected on clinical grounds, but in which none had occurred for seven years, and he attributed this to the beneficial action of the injections.

The reaction required for prophylactic purposes was a light one, not more than enough to give a temperature of 99° to 101°, and no harm resulted even from continuance of the treatment for four years.

He had now some 12 cases of sarcoma of a long bone, in which he had succeeded in averting the operations to which the patients had been condemned by well-known surgeons. Most of them were confirmed as to diagnosis by microscopical examination; some were round-celled and some myeloid. When the figures given by Butlin—68 cases with only 1 permanent cure—were remembered, these results assumed significance. It was sometimes objected that the waste of time was serious. As a matter of fact, in the slower growing, three weeks was not of moment; whilst in the rapidly growing even immediate amputation was foredoomed to failure, whilst his method did give some chance. Operation was easier and less extensive after toxin treatment, so that a stump could sometimes be left for an artificial limb instead of a disarticulation, say, at the hip. In the case of myeloids, enucleation was sufficient if followed by a course of injections.

No definite rules for treatment could be laid down. It was dangerous to stop too soon; generally from six weeks to three months were enough. The shortest successful series he had given was thirty-one injections, whilst a case of sarcoma of the breast injected in 1895 on seventy-eight occasions remained well to this day.

Sometimes recurrences had been observed after disappearance of the tumour. In a case of this sort in his first series, treated with the living germs and yielding only after four attacks of erysipelas, the patient kept well for some years; a recurrence was then successfully dealt with by toxins, but three and a quarter years later he died of metastases.

As a rough guide he would say, "Give toxins till the tumour had entirely disappeared; then for four months longer give smaller doses at longer intervals." The biggest dose usually employed was 8 minims three or four times a week, but he had given as much as 20 minims. The first dose should not be more than $\frac{1}{6}$ to $\frac{1}{4}$ minim, and should be given into the buttock; when given into the tumour itself the dose should not be more than a quarter of the last systemic dose. A temperature of about 102° to 104° was desirable. As long as this degree of reaction was elicited no further increase should be made; then the increment should be $\frac{1}{4}$ minim.

The obstacles he had had to overcome in obtaining support for his method had been: (1) The difficulty of standardization; this was solved for him by Dr. Buxton. (2) Failures published by other surgeons, chiefly due to imperfect trial. (3) The rarity of the disease and the

hopeless attitude of most surgeons towards tumours they saw no hope of relieving by the knife. It required courage and confidence, both on the part of the patient and of the doctor, to face a treatment that might involve a temperature of 105°, a chill, and cyanosis. Fatal cases reported by other surgeons were almost all due to neglect of the most ordinary precautions. In his own list of 500 cases there were only 3 deaths. Two of these were due to embolism, the most frequent cause of a fatal issue in other hands also, and resulted from too big an initial dose directly into the tumour.

Speaking of final results, he had now treated successfully 52 inoperable cases; of these, 35 remained well after from three and a half to sixteen years; 28 after from five to sixteen and 14 after from ten to sixteen years. In all but 2 of these 52 diagnosis was confirmed by the microscope. There were now something over a hundred successes reported by other surgeons. When he read a paper recently before the New York Medical Society, no criticism of accuracy of diagnosis was made. It was said that, if he was right, his treatment ought to have been widely adopted, and that it would have been used in Europe. Many people's failures dated from fifteen years ago, and their arguments did not apply to the modern technique. If history was clear upon one point, it was that there was no relation between the value of a discovery and the rapidity of its acceptance by the profession. In conclusion, he wished to acknowledge his indebtedness to Drs. Buxton and Bull.*

Vote of Thanks.

A vote of thanks to the lecturer was proposed by Mr. BUTLIN and seconded by Sir ALMROTH WRIGHT, and was carried with acclamation.

ASSOCIATION OF REGISTERED MEDICAL WOMEN.—At a meeting on July 6th, Dr. MAY THORNE in the chair, Mrs. SCHARLIEB opened a discussion on *Post-partum haemorrhage*, giving as the chief causes of the condition inertia of the uterus (by far the most frequent), lacerations of some part of the genital tract, heart disease, or toxic conditions, for example, albuminuria. The causes of inertia were precipitate or tedious labour, overdistension of the uterus, and the presence of tumours, especially interstitial fibroids. Inertia from tedious labour might be obviated by a timely use of forceps. With regard to chloroform, the speaker considered that if it was carefully given it averted rather than caused inertia, by preventing the exhaustion due to pain and anxiety. The prophylactic treatment of *post-partum* haemorrhage further consisted in the proper management of pregnancy and of labour (especially of the third stage). The treatment of the actual condition should be systematic; the following measures should be carried out in order: (1) Brisk but gentle massage of the abdomen. (2) Hot intrauterine douches; clots or placental tissue could be removed at the same time, and the presence of lacerations noted. (3) Traction on the anterior lip of the cervix. (4) Compression of the aorta. (5) Packing of the uterus and vagina with iodoform gauze. Subsidiary measures consisted in raising the foot of the bed, bandaging the legs, and stitching up lacerations. The drugs that were useful were ergot, ergotinin, calcium chloride, quinine (in large doses), and strychnine. Mrs. WILLEY said that she had found the method of drawing down the cervix of the greatest service, and thought that the efficacy of plugging the uterus was largely due to the preliminary traction on the cervix. Mrs. GRANGER EVANS noted that *post-partum* haemorrhage was liable to occur in women who had suffered from *ante-partum* haemorrhage. Miss TURNBULL considered that precipitate labour was an infrequent cause of *post partum* haemorrhage. Miss DE GARIS commented on the troublesome cases of continued trickling haemorrhage, and spoke of the value of intravenous and submammary saline injections. Dr. MAY THORNE agreed that chloroform was not harmful if given carefully. She considered that bimanual compression of the uterus was one of the best and safest methods of stopping haemorrhage from the uterus.

* Details of the method of preparation of the mixed toxins can be found in the BRITISH MEDICAL JOURNAL, 1908, vol. i, p. 1064; and in the *Boston Medical and Surgical Journal*, vol. 158, No. 6, p. 178.

Reviews.

DISEASES OF CHILDREN.

DR. ERNST MORO has published the results of an interesting and instructive piece of research on the haemolytic properties of the child's serum in health and disease.[1] Taking first the serum of healthy adults as a standard for comparison, and testing it with sheep's blood corpuscles, he finds that its content of complement does not show marked variations either with different individuals or at different times, when the conditions of experiment are the same. With normal children above the age of sucklings, the tests for haemolysis yield similar results to those obtained with adults. But the amount of complement is lower in newly-born children during the first week of life, and varies with different individuals. Examinations of the amount of complement at different periods during the age of suckling also yield variable results, which appear to be correlated with the mode of nutrition. These differences are not very great and are not absolutely constant, but the author attaches significance to the fact that, independently of the body weight, it is much commoner (in 10 out of 17 cases) to find a low complement value with artificially-fed infants than with those which are breast-fed (in only 2 out of 12 cases). He remarks that this fact supports his conclusion, deduced from previous observations, that, *ceteris paribus*, the blood serum of breast-fed children is more strongly bactericidal than that of bottle-fed infants. With regard to children not in a healthy condition, a difference is observable between the infectious and the non-infectious maladies. In the latter the haemolytic property of the serum corresponds to the normal; but in the infectious diseases, particularly in typhoid fever, pneumonia, and tuberculosis, it is distinctly higher.

Dr. VON VOGL, of the South German Army Medical Staff, discusses in a recent monograph[2] the relationship between infantile mortality and the supply of recruits. The author is of opinion that a high death-rate in the first years of life is far more detrimental to the interests of national defence than the deterioration of physique which is associated with the modern tendency towards rural depopulation. He gives a map which seems to indicate that infantile mortality is, in South Germany and Austria, excessive in low-lying districts. The territories bordering on the Danube, almost without exception, show a high infantile death-rate. Taking Bavaria as a whole, the infantile mortality is much higher than in any other part of Germany. Dr. von Vogl believes that constitutional weakness, dependent on poorness of parental and ancestral stock and improper feeding, are the chief causes of death in infancy; he is inclined to attach more weight to the former influence. He emphasizes the importance of physical training during the years of school life, and, with the help of a study of the records of long distance races, makes clear the dangers incurred in forcing imperfectly trained and physically unfit men to undertake long marches when burdened with accoutrements. The work contains some information which deserved more enlightened statistical treatment than it has received. As might perhaps be surmised from the title page, Dr. von Vogl has a fondness for long sentences which even exceeds that of the average German author. Dr. von Vogl, whatever may be thought of his literary powers, deserves a word of commendation for adding his testimony to that of the cloud of witnesses who have protested against the disregard of common hygienic principles which has too often characterized military administration.

Dr. SITTLER has put together an interesting study of "the most important bacterial types in the flora of the suckling's intestine."[3] Immediately after birth there are

[1] *Ueber das Verhalten hämolytischer Serumstoffe beim gesunden und kranken Kind.* Von Dr. Ernst Moro. Wiesbaden: J. F. Bergmann; and Glasgow: F. Bauermeister. 1908. (Sup. roy. 8vo, pp. 100; 15 illustrations in the text. 3s.)

[2] *Die Sterblichkeit der Säuglinge in ihrem territorialen Verhalten in Württemberg, Bayern und Oesterreich, und die Wehrfähigkeit der Jugend, mit besonderer Rücksichtnahme auf die Anforderung an die Marschfähigkeit.* Von Dr. von Vogl. München: J. F. Lehmann. 1909. (Med. 8vo, pp. 74. M. 2.40.)

[3] *Die wichtigsten Bakterientypen der Darmflora beim Säugling.* Von Dr. Paul Sittler. Würzburg: Curt Kabitzsch. 1909. (Sup roy. 8vo, pp. 70. M. 2.50.)

found in the infant's mouth the enterococcus, *B. perfringens*, and *B. coli*, all of which are doubtless derived from the mother's vagina. To these bacteria there are soon added *B. bifidus*, *B. lactis aerogenes*, *B. acidophilus*, and *B. exilis*. The enterococcus (*Streptococcus acidi lactici*) is the principal bacterium of the small intestine, and its capacity for souring milk probably restrains the growth of other bacteria in this part of the bowel—for example, *B. lactis aerogenes* and *B. coli*. In the large intestine the most important micro-organism is the anaërobic *B. bifidus communis*, which is also the chief bacterium found in the stools, whilst the *B. perfringens* is characterized by its occurrence in the layer of mucus adherent to the inner surface of the intestine. In pathological conditions not attributable to other and extraneous causes the *B. coli* and *B. lactis aerogenes* are responsible for the milder disturbances, and *B. perfringens*, growing in symbiosis with *B. coli*, for the severer cases. The bacterial infection of the intestinal tract is completed during the first four or six days of life. Ten to twelve hours after birth a few examples of enterococci and *B. coli* are found in the meconium; and by the second day the *B. perfringens* is added to the contents of this excretion. The disappearance of this organism from the meconium is accompanied by the change of the excreta into the normal orange-yellow type, with a preponderance of *B. bifidus*. In discussing the influence of diet on the bacterial contents of the infant's intestine the author attaches special importance to the carbohydrates; his observations on the part played by various sugars in favouring or restraining the growth of particular organisms will be read with especial interest.

A highly favourable opinion of Dr. HUTCHISON'S *Lectures on Diseases of Children*[4] was expressed when the first edition appeared in 1904. In the second revised and enlarged edition the pages have been increased by nearly a hundred, and fresh chapters have been inserted on some diseases of the newly born, congenital pyloric stenosis, chronic constipation in infancy and childhood, some common symptoms of disease in children and their diagnostic significance, and some of the common skin diseases of infancy and childhood. Each of these additions, it may be said, enhances the value and usefulness of the work. As a preliminary to the study of the larger and more systematic treatises on disease in childhood, we know of no work more likely to prove of service. Dr. Hutchison possesses the happy gift of stating the main essentials of each complaint in a plain and lucid manner, and his dogmatic mode of expression is the more calculated to impress his statements upon his readers. In the review of the first edition we commented adversely, and Dr. Hutchison subsequently defended, the advice to feed babies on a mixture consisting of a teaspoonful of Nestlé's milk in six tablespoonfuls of water. In the new edition the advice is retained, but the analysis of the resultant mixture is considerably modified. It may still be pointed out, however, that in the different analyses given in the two editions the proportions of protein to fat do not correspond; in the first, indeed, the amount of protein exceeds that of the fat, whilst in the second analysis the reverse obtains. This must mean that either one or both analyses are at fault. It would be easy to give other reasons in justification of our objection to the author's advice on this point, and we still think it may be harmful, especially when coming from a recognized authority on dietetics like Dr. Hutchison. Of the new chapters, that on congenital pyloric stenosis is especially interesting and suggestive, and Dr. Hutchison speaks "with no uncertain voice" as to the frequency of that complaint and its treatment. "I am perfectly sure," he says, "that any one who is capable of diagnosing it will meet with cases in his practice not very infrequently." As to this, it can be said that numerous observers, who are reputedly capable in other respects, must, if he be right, not only miss many cases in the wards of children's hospitals, but in the *post-mortem* rooms as well. All available *post-mortem* evidence points in the direction of pyloric stenosis being a rare complaint; and, if he be right in his estimation of its frequency, the discrepancy between him and others can only be explained by the suggestion that many cases recover, in spite of the lack both of correct diagnosis and appropriate treatment. He is equally dogmatic as to operation, and his view, which he emphasizes by italics, is "*that operation is never in any circumstances justified in these cases.*" Such a view, needless to say, is in direct opposition to that of the Edinburgh authorities, to whom the profession is largely indebted for its present knowledge of the condition. As in the first edition, Dr. Hutchison places the recoveries from post-basic meningitis as high as 50 per cent.; and we may repeat that his experience of the disease must be exceptional, for his percentage of recoveries is probably four or five times as great as that of most other authorities. In spite of the few criticisms we have ventured upon, we would wish to express our high appreciation of the numerous merits of Dr. Hutchison's work. It is profusely illustrated by photographs, which are admirably adapted for their intended purposes. It is a pity, however, that the quality of the paper of the second edition should fall so far below that of the first.

[4] *Lectures on Diseases of Children.* By Robert Hutchison, M.D., F.R.C.P. Second edition, revised and enlarged. London: Edward Arnold. 1909. (Cr. 8vo, pp. 438. 8s. 6d.)

Infant feeding is far from being neglected at the present time by medical writers, and Dr. FOWLER'S book[5] is no less than the third on the subject by members of the staff of the Edinburgh Children's Hospital during the course of a few months. It may be said at once that the merits of his work are great. Dr. Fowler has evidently a profound knowledge, both theoretical and practical, of his subject, and no important detail has escaped notice at his hands. His sections on the bio-chemical properties and composition of milk are excellent, and more up to date than those in any other work on infant feeding with which we are acquainted. He is no half-hearted advocate for the routine sterilization of cow's milk. After giving thorough details as to the pasteurization, sterilization, and boiling of milk, and their respective advantages and drawbacks, he writes:

> No one will deny that germ-free milk (could it be procured) is preferable to milk which has been cooked; but, in the absence of this ideal, it seems to me that to do anything to foster an opinion which has tended to prevail both in lay and medical circles in late years—namely, that raw milk in any form is superior to artificially sterilized milk—is to assume a serious responsibility and to commit a very grave error.

That raw milk in any form is superior to sterilized milk is so manifestly absurd that we would have thought no one could have been found to differ from Dr. Fowler on the point. But, given milk that on reliable evidence is reasonably pure, and with proper precautions, such as the absence of epidemics and very hot weather, there is an increasing number of competent authorities who consider the ultimate results of feeding are better with such a milk when it is given raw than when it has been subjected to any process of heating. To compare the necessity of the sterility of an infant's food with that required in surgical operations, as the author does, is to overstate the case. Dr. Fowler has had an extended experience of Budin's method of feeding with whole sterilized milk, and writes in its favour. He gives the precautions that are necessary before attempting it, and his directions should be followed by any one resolving to try the method. Regarding buttermilk, of which one hears so much nowadays, Dr. Fowler writes judiciously and with reserve. He has not found it to possess all the virtues that have been claimed for it, but sometimes his results with it in cases of chronic gastro-intestinal disorder have been eminently good. He attributes success with it mainly to its low percentage of fat and the absence of coagulable casein. The author may be congratulated on his excellent book, which deserves success.

A book that has reached a third edition must be supposed to have supplied a want. In the case of Mrs. SADLER'S work, *Infant Feeding by Artificial Means*,[6] however, we are at a loss to imagine to what class of readers it

[5] Oxford Medical Publications. *Infant Feeding: A Practical Guide to the Artificial Feeding of Infants.* By J. S. Fowler, M.D., F.R.C.P. Edin., Physician to the Royal Hospital for Sick Children, Edinburgh, etc. London: Henry Frowde, and Hodder and Stoughton. 1909. (Cr. 8vo, pp. 240. 5s.)

[6] *Infant Feeding by Artificial Means: A Scientific and Practical Treatise on the Dietetics of Infancy.* By S. H. Sadler, author of *Suggestions to Mothers*, etc. Third edition. London: George Routledge and Sons, Limited. 1909. (Post 8vo, pp. 253. 3s. 6d.)

can have appealed. The author apparently possesses no medical qualification, and her work is mainly a compilation from the writings of others. In the preparation of the present edition it would seem a pity that she did not consult some competent authority, with a view to the work being brought up to date. Had this course been followed, the quotation from the late Dr. Playfair, in which preference is given to long-tubed feeding bottles over others, would hardly have been retained. The same might be said of the quotations from the late Dr. Routh, dealing with cases in which, owing to intestinal troubles, there is intolerance for milk, and it is advised: "The aliments to be given in these cases are two—*good black tea*, mixed with milk, which last should be given only in sparing quantities, and raw meat." The last-named author is further quoted to the effect: "Tea comes to resemble very closely beef tea, and as such may be looked upon as a very good substitute." Many other quotations could be given which are not in accord with modern notions or practice. The author would seem to have spent much time in writing to authorities for information on elementary points of minor importance, and in numerous instances their answers are printed in full, thus adding unnecessarily to the bulk of the work. Whilst many parts of the book are likely to be useful, it cannot in the present day be considered a satisfactory guide to the artificial feeding of infants without careful revision and many alterations.

ABDOMINAL SURGERY.

THE first volume of DEAVER and ASHHURST'S *Surgery of the Upper Abdomen*[7] is devoted to disorders of the stomach and duodenum. The object of the work is to present a digest of the enormous accumulation of papers on these organs by surgeons all over the world. An attempt has been made to sift the valuable from the worthless, and thus to provide a ready means of correcting the bias inseparable from close application to practice in one clinic or country without some guide as to the reliability of statistics from outside. After short chapters devoted to anatomical, physiological, and diagnostic considerations, the text is divided into sections of very different lengths, according to the importance of the part under review; thus, "phlegmonous gastritis" has but three pages, and these are chiefly records of cases and operations, with results; "gastric ulcer" has some sixty-five pages devoted to accounts of the various conditions in which operation is demanded, the most appropriate procedure to adopt, the complications that may arise, the results hitherto achieved, and a select list of recent papers. Towards the end of the book is a chapter on the technique of operations; it deals briefly and lucidly with a great many of the most popular operations, but the authors are perfectly definite about their own choice of methods, and give, for the most part, cogent reasons for their selection. It will be seen, therefore, that the volume will be very useful as a means of reviewing rapidly the modern position of gastric surgery, and particularly helpful to any one trying to collect examples of rare or unusual cases that happen to come under his hands. The authors have accomplished their task with great success; they draw upon a large personal experience, and are explicit as to their own preferences and rules, whilst at the same time they are impartial in their estimate of other surgeons' work. They cannot include everything, of course, but they give so much space to the work of Gandy and Hort in connexion with the etiology of gastric ulcer that one would expect to find some reference to that of Bolton. On the other hand, the late Mr. Harold Barnard's papers, published in the BRITISH MEDICAL JOURNAL last year, are drawn upon largely for the account of subdiaphragmatic abscesses, and handsomely acknowledged. A clinical observation with which all surgeons will certainly not agree is to the effect that not until peritoneal reaction, after perforation of a gastric ulcer, has commenced does marked rigidity of the abdominal wall appear; it certainly appears within half an hour or less of the first onset of pain in some cases. It is satisfactory to find the excision of a perforated ulcer condemned as a waste of time better spent in performing gastro-enterostomy. The authors are not much in love with Finney's pyloroplasty, and seem to think it will not supplant gastro jejunostomy even in cases of simple ulcer, but they describe the operation fully, and evidently consider it very much in the field. Under the head of gastrostomy it is a little surprising to find "Roux's operation" in the same type as Witzel, Franck, and so on, for it is an isolated instance in which a loop of jejunum was transplanted beneath the skin of the chest to connect a cervical oesophageal fistula with a gastric. This book will not need a great deal of recommendation; it is sure to find its way into the hands of all those engaged in the active practice and recording of abdominal surgery.

We welcome the publication of a second edition of DOUGLAS'S *Surgical Diseases of the Abdomen*[8] both because it indicates that the book has already been appreciated and because it gives us another opportunity of urging its claims upon the limited time of working surgeons already harassed by a superfluity of print. The author found time amidst a busy practice to *think* about his cases, and to work out a reasonable reference to pathology for his collated empirical observations. He writes with special attention to diagnosis; he seeks the exact significance of small signs and symptoms, weighs their inherent and relative value and points the moral of his results in fresh and vigorous terms. He has taken full advantage of recent literature and gives his readers short lists of references. There is no detailed account of operative minutiae although he discusses the advantages of different measures; he seems to have no obsessions or fads and is quite frank as to failure. As we stated in reviewing the first edition this is no compendium of old maxims; it is solid and thoughtful experience expressed in terms that make pleasant reading and are at the same time most instructive. It is no real drawback that the editor of this edition, Dr. Barr, has treated the text reverently and not been too anxious to be absolutely up to date with quite recent papers. The most valuable part of the book will be unaffected by the progress effected for some years to come.

OPHTHALMOLOGY.

RETINITIS pigmentosa is a disease which even in these days is obscure, and in spite of the large amount of work which has been done upon the subject we have no true knowledge as to its cause. One of the latest monographs concerning it is that written by Dr. WILLIAM T. SHOEMAKER of Philadelphia, who, in conjunction with Dr. John M. Swan, has been awarded the Alvarenga prize of the College of Physicians of Philadelphia in 1908.[9] It is based on an analysis of 17 cases occurring in deaf-mutes. The book contains three coloured plates and other diagrams, a copious bibliography and an index. Of the seven chapters the first deals with the history of the disease and its pathology, and the second with symptomatology. Neither contains anything not generally known. The etiology is discussed in the third chapter; the distribution of the disease seems to be universal, no country being without its victims, but it is particularly prevalent in Turkey and throughout the East, while the Jewish race is said to provide an unusual number of cases. The authors assume that when deaf-mutism and idiocy are associated with retinitis pigmentosa the one is not the cause of the other, but that they are the result of a pathological condition common to both. They consider that direct transmission from parent to child seldom takes place; in their series not an example of it occurred. There is, however, abundant evidence that the disease has been transmitted through several generations, and that heredity has a potent influence. Such cases are known to every one, and records abound in literature. In the present series it was found practically impossible to learn much of value concerning the ancestry of the children beyond the generation next preceding them. Statistics are very

[7] *Surgery of the Upper Abdomen*. By J. B. Deaver, M.D., LL.D., and A. P. Cooper Ashhurst, M.D. Vol. i, Surgery of the Stomach and Duodenum. London: Rebman, Limited. 1909. (Roy. 8vo, pp. 480. Illustrations 76. 21s.)

[8] *Surgical Diseases of the Abdomen*. By Richard Douglas, M.D Second edition. London: Rebman, Limited. 1909. (Roy. 8vo, pp. 909; 20 plates. 26s.)

[9] *Retinitis Pigmentosa; with an Analysis of Seventeen Cases occurring in Deaf-mutes*. By William T. Shoemaker, M.D., Philadelphia. Laboratory examination of the blood and urine by John M. Swan, M.D., Philadelphia. Philadelphia: J. B. Lippincott Company. (Med. 8vo, pp. 112. With illustrations and 3 coloured plates. 8s. 6d.)

conflicting as to whether consanguinity plays any part in the development of the disease. "Syphilis plays a very doubtful part, if any, in the causation of retinitis pigmentosa." There is a discussion on the relation of deaf-mutism and idiocy and of cirrhosis of the liver to retinitis pigmentosa. Details of the authors' cases are given, as well as the results of analysis of the blood and urine. The conclusion is that the disease is a degeneration of the entire neuro-vascular track of the peripheral end organ of vision, extending backwards to the brain, but not an inflammation within the eyeball, the primary structure involved being the choroid, while the retinal changes are secondary. The disease is always congenital, however late it is before it manifests itself, while heredity is an important etiological factor. Consanguinity is of importance only in connexion with heredity and environment. Retinitis pigmentosa without pigmentation is a disease identical with retinitis pigmentosa, while unilateral retinitis pigmentosa is inconsistent with the authors' idea of the nature of the disease. The book is well got up, and sums up our present knowledge of the disease.

The large and most complete book by CASEY A. WOOD of Chicago, *A System of Ophthalmic Therapeutics*,[10] does not consist simply of a description of drugs used for diseases which have a direct or remote effect upon the eye; a very careful description is given of these diseases, and the treatment indicated in each; there is, for instance, a really good description of various diseases of the stomach, liver, brain, etc., which involve the ocular apparatus. The non-surgical treatment of the diseases of the nose and neighbouring cavities which affect the ocular apparatus is next considered, and a chapter is then devoted to general anaesthetics in ophthalmic operations. A very full account is given of the methods of testing the sight of railroad employees and seamen in America, and the information it contains is useful and interesting to those who are engaged in similar work in other countries. A large portion of the book is given up to the discussion of remedial agents employed in eye diseases. The volume is not entirely the work of Dr. Casey Wood, for although he has written the greater part of it, and is responsible for the whole, yet many of the chapters are by other well-known American physicians and surgeons, who deal with branches of the subject which they have made peculiarly their own. Thus there is a particularly interesting section devoted to the history of ocular therapeutics by Dr. Alfred Murray of Chicago. The final chapter deals with the preparation of the patient for ophthalmic operations. A very full index completes the work. The volume is of prodigious size, but the author takes a wide view, and it may well be termed "a system," as it deals with every imaginable form of treatment except operative, that can be used upon the eye. It treats of diseases which can only very remotely be considered to bear any relation to the eye at all. It is complete and eminently practical, and will add to the reputation of Dr. Casey Wood, who is well known for his energy and high technical knowledge.

Bacteriology is still a subject which savours rather of the unknown with many people. This is due, of course, to the comparatively short time since it obtained a well established place in the medical curriculum, but as all students are now grounded, more or less thoroughly, in its principles, it is coming to be more familiar. It has solved many of the mysterious problems of disease, and in ophthalmology has done much to elucidate many vexed questions. We therefore welcome an English translation of Dr. THEODOR AXENFELD'S excellent book, which Dr. Angus Macnab presents with the title *The Bacteriology of the Eye*.[11] It is an elaborate work, beautifully got up and illustrated. The first chapter, which discusses technique, is very practical, and free from an excess of detail. The chapters on the bacteriology of the conjunctiva and cornea occupy the greater part of the rest of the book; leprosy, tuberculosis and syphilis of the eye, endogenous infections and the bacteriology of the orbit being treated in three concluding chapters. The book is wonderfully complete. Professor Axenfeld is a recognized authority on ocular bacteriology, he and Morax having done more in this line of research than any other scientists. The translator has done his work well, and we heartily commend the book to the attention of all workers in ophthalmic science, none of whom can afford to be without it.

[10] *A System of Ophthalmic Therapeutics.* Edited and chiefly written by Casey A. Wood, M.D., C.M., D.C.L. Chicago. Chicago: Cleveland Press. 1909. (Roy. 8vo, 926 pages, illustrated and completely indexed.)

[11] *The Bacteriology of the Eye.* By Dr. Theodor Axenfeld, Professor of Ophthalmology in the University of Freiburg. Translated by Angus Macnab, B.A., M.B., F.R.C.S. London: Baillière, Tindall and Cox. 1908. Large 8vo, pp. 425 illus. 105. 21s.).

NOTES ON BOOKS.

THE description of Dr. C. P. EMERSON'S book on the *Essentials of Medicine*,[12] as a textbook of medicine for students beginning a medical course, for nurses and for all others interested in the care of the sick, is sufficient evidence of its elementary, not to say popular, character. It is clearly and brightly written, generally accurate in its statements, and simple to the point of colloquialism. If for medical students, its place should surely be at the very earliest possible period in their medical course; if for nurses, it should prove really useful during their theoretical training; and if for a member of the general public, it should chiefly serve and act well in making clear how important it is to have expert medical advice in practically every case of illness. As the author puts it, the book will aid him to understand more clearly the medical problems of the day, to appreciate more highly a well-trained practitioner, and to co-operate better with his doctor. From the point of view of the profession, its great virtue is a series of 116 diagrams illustrating in an admirably graphic manner important points in clinical medicine.

The first part of Dr. VIKTOR BLUM'S book on the symptomatology and diagnosis of urogenital diseases was noticed in the JOURNAL in May, 1908. The second of the three parts of which the whole work is to consist has lately appeared, and deals with the symptoms of functional affections of the male sexual organs.[13] Besides impotence and sterility, it includes also sections on priapism, sexual neurasthenia, and some other matters. The second part, like the first, is carefully written, and contains a good deal of useful and practical information on the subjects dealt with; but, as the question of treatment is not considered, it is, of course, incomplete, and as there are no headlines to the pages and no index it is not easy to find one's way about in it.

The fact that Professor GEORG KLEMPERER'S small book on the elements of clinical diagnosis[14] has reached its fifteenth edition, and that it has been translated into no less than six languages, is sufficient proof of its popularity; but it has other claims on the reader, which are not found in every book of the kind. Although the matter is elementary in so far as only guiding lines to diagnosis are described, the mass of information, which must prove useful both to student and practitioner, is very large indeed and clearly worded. Each diagnostic fact is recorded in a short, simple sentence, and each symptom complex is described by means of a group of such sentences. Here and there a few omissions are to be noted, and less frequently doctrines, which are not universally held, are put forward as fact. The book, however, is composed of material which can be given to any student, and we would wish to extend its sphere of utility by recommending it to practitioners who are afraid of deteriorating in diagnosis and who have not enough spare time to study larger books.

[12] *Essentials of Medicine.* By C. P. Emerson, M.D. Philadelphia and London: J. B. Lippincott Company. 1908. (Demy 8vo, pp. 383; 8s. 6d.)

[13] *Symtomatologie und Diagnostik der Uro-genitalen Erkrankungen.* Von Dr. Viktor Blum. Zweiter Teil. Leipzig und Wien: Franz Deuticke. 1909. (Roy. 8vo, pp. 180. M. 5.)

[14] *Gundriss der klinischen Diagnostik.* By Professor Dr. Georg Klemperer. Fifteenth edition. Berlin: A. Hirschwald. 1909. (Post 8vo, pp. 300, 2 plates, and 53 illustrations. M. 4).

THE fourth series of lectures on scientific microscopy at the Institute for Microscopy of the Jena University, will be held from October 11th to October 16th. In addition to the lectures, practical demonstrations will be given on the Abbé refraction apparatus test plate and apertometer, and on photomicrography with ultra-violet light, with monochromatic visible light and with incident light (for metallography), and on ultramicroscopy of firm colloids of colloidal solutions and of the cells and fibres. Further particulars can be obtained from Dr. Ehlers, Beethovenstrasse 14, Jena. The first of these courses was held in Jena in 1907, the second in Vienna in 1908, and the third in Berlin in March last. The fifth course will be given at Leipzig in March, 1910.

THE FINANCIAL PROSPECTS OF MEDICINE.

RELATIVE OVERSTOCKING.

IN an article recently published in these columns[1] attention was drawn to the increasing frequency of complaints among medical men as to undue difficulty in making an adequate income, and it was asked whether medicine should be regarded as a less efficient money-making calling than formerly so far as are concerned men of average ability and average opportunities. It was shown that while no final answer could be supplied without weighing the effect of a multiplicity of factors, a great deal of light was likely to be thrown on the matter by applying to the problem ordinary economic principles.

Medicine in the connexion in which it is here considered is simply a commercial undertaking, and the financial prospects of every form of commercial enterprise depend primarily on the ratio between supply and demand, and secondarily on variations in the precise character of the demand and in the facilities which exist for meeting it. All these factors may vary very greatly without material interference with the stability of the enterprise as a whole; but it is far otherwise with the individuals engaged in it. They are sensitive plates, which automatically register every variation—pools and creeks which ripple in response to every movement of the general ocean. And in medicine the average pool is very small—so small that a scarcely perceptible heave in the general ocean may in them mean not merely a ripple, but a wave, disastrous or beneficial in its outcome.

The position of the individual remains unaltered if the demand and supply rise and fall together, but in the contrary case it is benefited or damaged according to whether the variation in the ratio between supply and demand results in relative understocking or its converse.

The Supply.

If, for instance, the supply (or the number of persons ready to furnish it) increases while the demand remains unaltered, the financial position of any given individual engaged in the form of enterprise in question must at once deteriorate. This is clear from the following consideration. When, for example, X represents the demand and Y the supply (or number of workers) and Z the amount of work (or profit), the calculation is:

$$\frac{X}{Y}=Z.$$

If, however, the number of workers is increased by b, then Z becomes proportionately less, since

$$\frac{X}{Y+b}=Z-\left(\frac{bZ}{Y+b}\right)$$

This principle when applied to the profession of medicine (in England and Wales) in the article already mentioned brought to light a very striking fact, namely, that the apparent value of Z had diminished by over 17 per cent. during the past twenty-eight years. This was shown to be due to the medical profession having grown in numbers so rapidly in that period that when the total population was equally divided among its members, each medical man only had 1,407 possible patients against the 1,710 possessed by his predecessor of the year 1882.

This being the case, the complaints as to hard times to which reference has been made might at once seem to be fully explained and justified. Such a conclusion would not, however, be convincing, since it has not yet been proved that the value of X (or the demand) is no greater than formerly. Unless this is shown it might be argued (on the ground that the 1,400 possible patients of to-day supply quite as much work as the 1,700 of twenty-eight years ago) that the alteration in the ratio between supply and demand was apparent rather than real.

This, therefore, is the point that must next be considered.

The demand for medical work set up by the existence of any given number of persons in any two years was in the last article assumed to be the same at the beginning and end of the period of twenty-eight years ending in 1908. If, however, it was greater at the end of the period, the deduction apparently to be drawn from the result of the first investigation is negatived. If, on the other hand, the demand set up by such community of 1,000 persons is less nowadays than it was twenty-eight years ago, the conclusion to be drawn from the altered ratio is greatly strengthened; for, obviously, if increase in the supply and diminution in the demand have been going on simultaneously the resulting overstocking must be very great indeed.

[1] BRITISH MEDICAL JOURNAL, June 12th, p. 1431.

The Demand.

Possibly the best way of getting a bird's-eye view of the truth would be to ascertain from life-tables what is the expectation of life now and at earlier dates. This should be useful, because it seems fairly indisputable that relative lengthening or shortening of the average expectation of life must represent similar changes in the average healthiness of the nation. Hence if it is found that the average expectation of life has extended since the beginning of the period it is clear that the demand for medical work set up by any community of 1,000 people twenty-eight years ago must have been greater than that originating in a corresponding number of persons of to-day.

Two life-tables are therefore here given. They are the later two of the four which have been officially compiled during the past half century. The earlier ones teach the same lesson, but are not quoted because based on mortality-rates which do not come within the period now under investigation. Similarly it has been thought superfluous to print the figures relating to ages over 60, because the majority of all persons, and therefore of each man's possible patients, are under that age.

TABLE A.—*Mean Expectation of Life at Certain Ages as Estimated by the Registrar-General after the last Two Censuses.*

Age.	Males. Mean After-lifetime in Years.		Females. Mean After-lifetime in Years.	
	Table A.	Table B.	Table A.	Table B.
0	43.65	44.13	47 18	47.77
1	50.97	52.22	53.24	54.53
5	52.75	53.50	54.92	55.79
10	49.00	49.63	51.10	51.97
15	44.47	45 21	46.55	47.61
20	40.27	41.02	42.44	43.44
25	36.28	37.01	38 50	39 37
30	32.52	33.07	34.76	35.33
35	28 91	29.24	31.16	31 52
40	25.42	25.64	27.60	27.82
45	22.06	22.20	24.05	24.20
50	18 82	18.90	20.56	20 64
55	15.74	15 79	17 23	17.24
60	12.88	12.93	14 10	14.10

The later figures are those headed "B," and on running the eye down them it will be noted that they are higher throughout than those under "A." The differences, it will be observed, are greatest in the earlier periods of life, and gradually diminish after the age of 30. In the figures relating to ages over 60 the difference, if any, tends to be unfavourable to people of the present date.

The additions to the expectation of life which the figures in column B indicate may seem insignificant so far as any single individual is concerned, but, taken as a whole, they certainly prove that the length of time lived by any considerable number of persons, such as 1,000,000, must in the aggregate be much greater than formerly. This table, therefore, would seem to indicate that the demand must have gone down so far as it is affected by the state of health of the majority of any community of unselected persons.

It might be argued, of course, that this addition to the mean expectation of life does not necessarily imply a greater freedom from illness, but merely increased care of the individual, and therefore to that extent increased work for medical men. It is superfluous to discuss this possible objection because in any case the contrary deduction

which has been cursorily suggested as fairly to be based on these tables must be checked by examination of other data. Among these are the death-rates from the principal zymotic diseases. It is not necessary to trace their course year by year, and only those for the years 1880. 1890, 1900, and the latest available year—1907—are here quoted:

TABLE B.—*Death-rates from the Principal Zymotic Disorders per Million of Population.*

Year.	Small-pox.	Measles.	Scarlet Fever.	Whooping-cough.	Diph-theria.	Enteric Fever.
1880	230	334	649	451	261	322
1890	44	406	312	414	286	198
1900	13	414	158	377	314	174
1907	*nil*	361	92	293	175	67

It will be noted that with the exception of measles every one of these death-rates shows a material drop between the beginning and end of the period under investigation, namely, 1880–1908. Small-pox has practically disappeared, the scarlet fever rate is scarcely one-sixth of what it was, and the enteric fever not one-quarter. On the other hand, if similar figures were printed relating to sundry other common diseases, such as pneumonia, diabetes, kidney disease, rheumatic fever, and cancer, a certain degree of increase in the mortality-rates would be shown. Excepting, however, in the case perhaps of cancer and diabetes, such increase might with perfect reason be ascribed not to a greater prevalence of these disorders, but to greater precision in the filling in of death certificates. Tuberculosis, moreover, might be claimed as a set-off, for the death-rate from this disease has dropped in the same period by little less than half.

The same sort of objection as that suggested in respect of the lesson to be derived from the table showing the mean expectation of life might be lodged against this table likewise. It would be possible to argue that the lowered death-rate meant not less sickness, but more efficient treatment. Notification of infectious disease has not been in force sufficiently long to test this point accurately; but in any case such a view could not be put forward on very assured ground. Therapeutics have certainly progressed, but not to such an extent as to account for the huge differences in the mortality-rates in the case of scarlet fever and enteric fever here shown. Furthermore, in the case of some of the diseases, such as small-pox, it is common knowledge that not only is the death-rate smaller than formerly, but the prevalence of the disease infinitely less.

Much the same story is revealed on study of the general death-rate during the period in question.

TABLE C.—*Annual Mortality, all Ages and all Causes.*

Year.	Males.	Females.	Both Sexes.
1880	21.0	18.7	19.8
1885	19.7	17.8	18.7
1890	19.6	17.5	18.5
1895	19.6	17.5	18.5
1900	18.8	16.5	17.6
1905	16.2	14.3	15.2
1907	16.0	14.1	15.2

It is, of course, true that attempts might be made to lessen the force of this table as a proof that any given body of 1,000 people provides less medical work to-day than a similar number of people twenty-eight years ago, but they would be even less convincing than in connexion with the former tables. It is difficult to believe that if out of every 1,000 people nowadays only 15 die yearly against 19 at the beginning of the twenty-eight years' period, the decrease does not truly spell a lessening of annual sickness.

The next and last factor which it seems worth while to consider is the course of the birth-rate during the period in question. Table D shows how it has varied, five-yearly periods being again printed as sufficiently indicative of the fashion in which the number of births per 1,000 of population have varied. It will be seen that since the beginning of the period in question the birth-rate has fallen very considerably.

TABLE D.—*Birth-rates per 1,000 of Population.*

Year.	Crude Figures.	Rates per 1,000.
1880	881,643	34 2
1885	894,270	32.9
1890	869,937	30.2
1895	922,291	30.3
1900	927,062	28.7
1905	929,293	27.2
1907	918,042	26.3

As for the influence of this rate on the question of supply and demand, it is clearly double in its character. In the first place, if the number of babies who come into the world every year are proportionately fewer than formerly, there must be a smaller number of confinements for medical men to attend. In the second place, babies give rise to a good deal of medical work, and if the number of babies in proportion to the general population falls off, the demand for medical work must slacken accordingly.

GENERAL CONCLUSIONS.

It may freely be admitted that none of these tables taken separately could be regarded as a conclusive proof that the demand for medical work existing at the end of the period was less than at the beginning, but when they are taken together it is difficult to assign to them any other effect. It might be possible, as already indicated, to minimize the influence of each of them, but as a whole the conclusion seems inevitable that the demand at the present time is not the same as it was in 1881, nor yet greater, but, on the contrary, smaller.

Since this is the case, the conclusion tentatively drawn from the first investigation is greatly strengthened. That conclusion, owing to the nature of the factors upon which it was based, it was possible to determine accurately and show in definite figures, so that it is the less regrettable that the outcome of the present investigation can only be stated in general terms. We already knew positively that the ratio number of medical men to the general population had greatly increased, and the only reason for not at once concluding that a condition of relative overstocking had thereby been set up was the possibility that it might be shown that a community of 1,000 persons to-day set up a greater demand for medical work than 1,000 persons twenty-eight years ago. We now have exceedingly strong reasons for believing that this is not the case, and hence may justly conclude that the two most powerful factors in creating relative overstocking in any occupation, and in deteriorating the position and prospects of those engaged in it, have been at work in the medical profession during the past twenty-eight years. These are an increasing supply and a falling demand, and they have been going on simultaneously.

The two investigations together, therefore, have revealed the existence of a circumstance which makes complaints among medical men of undue difficulty in making an adequate income perfectly comprehensible.

The causes so far indicated are not, however, in all probability the only ones which exist. As was pointed out at the beginning of the first article, it is not merely variations in the precise ratio between supply and demand which bring about relative overstocking. It is, for instance, common knowledge that in many an occupation of life thousands of persons have been ruined, not because the number of persons engaged in it have unduly increased, or because the demand has fallen, but because there have been fresh divisions of labour owing to the development of new facilities for meeting the demand.

The next step, therefore, must be to find out whether this factor has also been at work, and has been tending to render the task of a medical man of average ability and average opportunity in making an adequate income much more difficult than was that of his predecessor.

IMPERIAL CANCER RESEARCH FUND.

THE annual meeting of the General Committee of the Imperial Cancer Research Fund was held on Friday, July 9th, at Marlborough House, H.R.H. the PRINCE OF WALES, President, being in the chair. Amongst those present were the Knight of Kerry (Vice-President), Sir William Church, Sir R. Douglas Powell, Sir Henry Morris, Sir John Tweedy, Sir Charles Morrison-Bell, Mr. H. T. Butlin (President of the Royal College of Surgeons of England), Sir Henry Howse, Dr. Rose Bradford, Sir John McFadyean, Mr. Edmumd Owen, Dr. J. F. W. Tatham, Dr. F. W. Andrewes, Dr. Whipham, Dr. Arthur Newsholme, Dr. E. F. Bashford (General Superintendent), Dr. J. A. Murray, Dr. M. Haaland, and Dr. Russell. Letters expressing regret at being unable to attend were read from Lord Strathcona, Mr. Waldorf Astor, Mr. A. J. Balfour, M.P., and Sir Julius Wernher (Vice-Presidents), Her Grace Adeline Duchess of Bedford, Lord Rothschild, Sir Thomas and Lady Glen-Coats, and others.

ANNUAL REPORT.

The seventh annual report was presented. It included the report of the Executive Committee for 1908–9, and that of the General Superintendent.

Report of the Executive Committee.

The report of the Executive Committee stated that during the past year further correspondence had taken place with the authorities of the International Society for Cancer Research in Berlin, in which it had been suggested that the Executive Committee should reconsider the attitude it had hitherto adopted and join the International Society, and offering that the First International Congress should be held in London. The Executive Committee was of opinion that the decision it had arrived at was in the best interests of the Scientific Investigation of Cancer, and accordingly felt it must adhere to its position. At a subsequent date a petition was presented by the International Society for Cancer Research in Germany to His Majesty the King, patron of the Imperial Cancer Research Fund, asking that the decision might be reviewed, but His Majesty, after considering the facts submitted to him, with the approval of His Royal Highness the President, by the Chairman, the Honorary Treasurer, and the General Superintendent through the Foreign Office, was graciously pleased to express the view that the Imperial Cancer Research Fund had co-operated freely in the past both with German and other foreign workers, and would continue to do so in the future. As showing the extent to which the Imperial Cancer Research Fund had encouraged the investigations of independent workers both at home and abroad, it was stated that assistance had been given or promised in this country to the Middlesex Hospital; the Pilkington Cancer Research, Manchester University; the Research Department, Royal Infirmary, Dundee; Cancer Hospital, Brompton; the Bio-Chemical Department, Liverpool University; the Pathological Department, Aberdeen University; the laboratory of the Royal College of Physicians, Edinburgh; and others; abroad, to 3 investigators in Austria, 1 each in Belgium, Denmark, France, Russia, Spain, Japan, and New Zealand, 23 in Germany, and 2 each in Italy and the United States of America. A satisfactory feature of the past year had been the recognition of the work of the fund by foreign investigators, as was shown by the number of applicants for permission to work under the General Superintendent. The Third Scientific Report, comprising 509 pages and 303 illustrations and diagrams with numerous tables, published in October last, formed the most complete exposition of the results of the modern comparative and experimental investigation of cancer yet issued. Since that report was issued, the following papers from the laboratories had been published: (1) Advance in Knowledge of Cancer (*Nature*). (2) Heredity in Cancer (*Proceedings of the Royal Society of Medicine*). (3) Ergebnisse der experimentellen Krebsforschung; (*a*) Ueber das Wachstum uberimpfter Tumoren, (*b*) Wachstumshemmende und forderende Einflusse. (4) On the Occurrence of Cancer in Mice of Known Age (*Royal Society Proceedings*). On the recommendation of the Statistical Subcommittee it had been decided that it was unnecessary, for the present at any rate, to continue the collection of statistics of cancer cases from hospitals. In view of the importance attached for a short time to the treatment of cancer by trypsin, and of the negative results of such treatment published in the last two annual reports, due to the experiments of members of the staff, it was thought well to state that facilities for further experimentation by an entirely independent investigator on the means of checking the growth of malignant tumours by the injection of trypsin and other like preparations were afforded in the laboratories, and also gave entirely negative results.

General Superintendent's Report.

Dr. Bashford's report stated that general recognition had been accorded to the soundness of the pathological foundations of the experimental investigation of cancer, and unanimity had now been secured in the interpretation of the significance of the phenomena of artificial propagation of tumours. Experiment had demonstrated the truth of the conclusion deducible from medical and surgical experience, that the chief dangers of cancer lay in the difficulty of diagnosing it in a stage permitting complete removal, and still more in preventing dissemination throughout the body. The clinical course, the results of surgical and other treatment, the pathological findings and relation to general metabolism had now been carefully recorded for 300 mice which had been afflicted spontaneously* with malignant new growths of the mamma. These observations, according with experience in man, formed a sound foundation for attempts to apply the results obtained by studying the disease when induced experimentally to the disease as it occurred naturally. Propagation had been attempted for 28 only of the 107 additional cases of undoubted malignant new growth received during the past year, as previous experience had shown that practically all malignant new growths of the mamma could be transplanted. The additional tumours had been first examined histologically, and only transplanted when obviously differing from types already now in propagation, or possessing importance for other reasons—for example, two sebaceous adenomata, a melanotic sarcoma, several squamous-celled carcinomata, a carcinoma of the ovary, and several sarcomata. The careful observation of mice which developed cancer spontaneously had yielded additional evidence of the existence of constitutional conditions favourable for growth. The breeding experiments which had been in progress for several years were still being continued. In all, 29 cases of cancer had developed spontaneously in the mice bred in the laboratory from cancerous stock. As yet no evidence proving the hereditary transmission of cancer had been obtained. The numbers were not yet sufficiently large to make a detailed analysis of the relative liability of strains with differing degrees of cancerous ancestry profitable; but they had sufficed to demonstrate the validity of the law of age-incidence of cancer for mice in a form comparable with that which held good for mankind. Crude data obtained from the total number of cases of cancer occurring in the stocks of breeders of mice and rats had been held by many writers to indicate the endemic occurrence of cancer, not only in single cages in the case of these small animals but also in human beings and larger animals living in restricted areas. These data had been interpreted as evidence of the infectivity of cancer, although investigation had demonstrated not only the manner in which cancer could be transferred from one individual to another, and the restrictions to that transference, but also the fact that there was no evidence at present to show that the disease as it occurred in nature was conveyed by the transference of living cancer-cells. The short duration of the life of a mouse exaggerated, for statistical purposes, the importance of even so short a lapse of time as three months in determining a measurable increase in the liability of mice to develop cancer spontaneously. Thus, breeding experiments, when carried out carefully, did not support the arguments of an infective endemic occurrence of cancer for small laboratory animals. The propagation of spontaneous tumours had yielded results of value by the discovery of a second strain of propagable carcinoma in which the supporting connective tissue

* It was explained that this term was used to distinguish the natural disease of which the cause is still unknown from the disease induced experimentally, and must not be taken to imply a postulation of the manner of origin.

or stroma underwent sarcomatous transformation. The most evident constant factor determining the development of sarcoma from the stroma provided by each successive host of the carcinoma cells had been shown to be the duration of the active growth of the implanted carcinoma. The influence of the parenchyma of this new strain was so potent that the change supervened in practically every animal in which it grew, and the period at which this change in the host's connective tissues could be recognized was fairly constant. At the present time fifty mammary carcinomata were being propagated in the laboratory. In no case could it be said that any one tumour was an exact duplicate of another. In the large variety of malignant new growths of one tissue able to maintain their individuality under the uniform conditions of experimental propagation, an explanation was afforded of the contradictory behaviour long observed by the surgeon and the pathologist in malignant new growths apparently identical. The variations in malignancy were inexplicable, as was also the fact that with uniform care in operative procedure uniform results were rarely obtained. Explanations were sought in the differing constitutional conditions of the patients, but experiments had demonstrated that to a large extent the explanation was to be sought in the growths themselves. A much greater number of varieties of malignant new growths existed than was formerly supposed. During the year even more elaborate and more detailed investigations had been carried out than in earlier years as to the manner in which animals might be rendered resistant to the inoculation of cancer. The investigations had defined much more narrowly the experimental conditions under which the change was induced. It had been found that cells, whether cancerous or normal, which had been killed or disintegrated in any case, such as by chemical poisons or physical agencies (heat, cold, crushing, etc.), were entirely deprived of their power of conferring resistance. This result was in complete contrast with what obtained when the organisms of infectious disease were similarly killed or disintegrated, for in their case the products retained poisonous properties and powers of inducing resistance. Of particular interest was the action of radium upon normal and cancerous tissues without causing their disintegration. After exposure to radium for an interval within which no structural alteration could be observed in the tissues, either with the naked eye or microscopically, they might be completely deprived of their powers of growing and of immunizing. The abolition of these vital properties was here achieved with retention of the histological structure of the tissues and of intactness of the cells, and the experiments demonstrated that the power to elicit these biological reactions was intimately bound up with and dependent upon the vital activities of the cells themselves. Until now the parallel behaviour of normal and cancer tissue in these respects almost excluded the possibility of radium having a selective action upon cancer tissue. It would be well, pending proof of the existence of a selective action of radium upon cancer, not to disseminate exaggerated hopes as to the possible therapeutic value of radium. Experiments were in progress to determine if in any way the vital activities of the cell could be segregated so as to separate immunizing power from capacity for growth and continued propagation. It was impossible yet to say what influence, if any, had been exerted on dissemination or on the tendency to recurrence. Further investigations had been undertaken to elucidate the cellular reactions which take place in the connective tissues of animals during the processes of successful grafting, immunity, and spontaneous healing respectively. While corroborating the general results already published, namely, that the specific connective tissue and vascular scaffolding supplied by a normal was not supplied by an immune animal, they showed that the entire connective tissue system of the animal responds during the processes both of spontaneous healing and of immunization. The consequence was that any subsequent inoculation failed to elicited the response necessary for continued growth. It was not intended to deny that changes in the blood plasma accompanied the acquirement of resistance or immunity, but while it was difficult to conceive of so complete a constitutional change occurring without this intervention, the constitutional changes throughout the connective tissues proved that changes in the blood plasma were not solely responsible, and that the immunity was not purely of a humoral nature, but to a large extent cellular. An explanation was thus afforded of the negative results which have hitherto attended all attempts to obtain an anticancerous serum. From the general hospitals of England and Scotland details of 13,000 cases of cancer which had been submitted to microscopical examination had been collected. For the present the collection of clinical and pathological data from these sources had been suspended, as it was considered that the number already obtained promised to afford as satisfactory results as would even a larger number. This line of inquiry was embarked upon because of its critical bearings upon the interpretation and pathological value of the data on which the national mortality statistics were necessarily based. The wisdom of the conclusion arrived at in 1902 not to undertake a cancer census in the British Empire on the lines of that made in Germany on October 15th, 1900, had been justified not only by their own later experience, but also by the fact that since that date most other countries had recognized its futility.

An improvement in the value of the statistical investigations of cancer was to be expected only from an improvement in mortality statistics as a whole, that is, by increasing the accuracy of the data. The necessity for greater completeness and accuracy of the data of mortality applied still more urgently if comparisons were to be made between the statistics of cancer of different countries. Comparisons between different countries would be made profitable only by an all-round raising of the standards of accuracy and completeness of the mortality statistics as a whole with which those of cancer were inseparably bound up. Acknowledgement was made of the willingness with which Dr. Tatham had placed the resources of the General Register Office at the disposal of the Imperial Cancer Research Fund with a view to promoting the attainment of greater utility, accuracy, and completeness of statistics of cancer for England and Wales. The collaboration of a National Statistical Office had not been vouchsafed to the same extent to similar inquiries out of England and Wales. In the continuance of the collection of hospital statistics for six years, attention had been directed persistently to the importance of the microscopical examination of new growths, and to the difficulties inseparable from the diagnosis of a disease like cancer, which had no specific symptomatology. The collection of the data, therefore, had had a high educational value throughout the country, which must react both upon the medical profession and the public. As time had passed they had accumulated automatically in ever increasing numbers, both from London and the provinces. Whereas in 1905, 1,443 records were received, in 1908 the number amounted to 2,248. It might be hoped that the beneficial influence of this prolonged inquiry would continue, as it was almost certain to do, owing to the important clinical and surgical results which had followed from the study, made partly in the laboratory, of early cancer and pre-cancerous conditions of the tongue, and because of the movement undertaken by the British Medical Association for the earlier diagnosis of cancer of the uterus. In Germany, also, new centres for the microscopical examination of new growths had been or were about to be established. The inquiry had revealed how numerous were the hospitals both in London and in the provinces undertaking the complete pathological and microscopical examination of large numbers of cases of cancer annually, although few made a special feature of tabulating and publishing the results It was to be regretted that the relation of clinical symptoms and pathological features was not systematically recorded, whereas it might so easily and profitably be done.

The collection of data from outlying parts of the empire had been continued, particular attention having been directed again to the importance of seeking for peculiar forms of chronic irritation associated with the occurrence of malignant new growths in native races. In this connexion, a new and most interesting observation had been reported from Egypt, namely, the occurrence of cancer of the skin of the chest on the triangular area of skin left bare by the clothing worn by the Felaheen.

Dr. Bashford continued:

Reviewing the results of seven years' work on the comparative and experimental investigation of cancer, one is struck by the difference between the nature of the problems before us seven years ago and of those now being considered, as well as by the freedom one feels in investigating the problems presented to-day, without the incubus of having to consider them from the standpoints of the many hypotheses now proved to be untenable. I do not think that too much is claimed by asserting that the arduous labour of the past seven years is gradually effecting, and in several respects has actually effected, a complete revolution in many aspects of the cancer problem. But it has done still more in opening up new vistas in biology. Seven years ago no one conceived it possible that portions of the mammalian organism could be kept growing for a period four times the length of life of the whole animal. But to-day the number of different kinds of tissues now being propagated separately, make it theoretically possible that the majority of the tissues may be so grown and segregated. In other words, a living animal can be analysed into many of its living component tissues. The finer relations of various kinds of tissues to one another have been revealed by the application of the new methods. The biological alterations which living mammalian cells may undergo suddenly, as well as gradually, under the influence of experimental conditions, can now be studied. These and many other achievements in the field of general biology are the most important practical fruits which have accrued from the experimental study of cancer, upon which they have only indirect bearings. Ultimately they are bound to be of far-reaching general biological importance, although to-day they are merely the weapons that have been forged to attack cancer. Their further development and their utilization for the solution of purely biological problems will probably precede the solution of many of the problems surrounding the natural causes of cancer.

While some chance opportunity may yield results of immediate practical moment, the outlook on therapeutics in the meantime is in the direction of preventing dissemination or metastasis. The means of explaining why inoculated cancer can undergo spontaneous cure itself have been greatly enriched by the acquisition of fresh strains of propagable tumours behaving in a variety of ways in this respect, and presenting all gradations, from some growing progressively in every animal inoculated, to others which, while developing for a time in every animal, are ultimately got rid of in all cases by the active resistance which the tumours induce against themselves.

Speaking of the laboratories, he went on to say that whereas in 1902 two rooms only were placed at his disposal, to-day the entire accommodation of the laboratories of the Royal Colleges had been placed at the disposal of the Imperial Cancer Research Fund. During the first year of active work the staff consisted of the Director and one colleague. To-day there were four official assistants to the Director, six voluntary scientific workers in the laboratory and a staff of fourteen other laboratory assistants. The investigations had grown to an extent which fully occupied the entire accommodation in the present premises. The future of the investigations depended not only upon whether the Royal Colleges could continue to support them on the same generous scale as heretofore, but also upon whether they could provide for the exigencies of future developement.

Sir WILLIAM CHURCH, in moving the adoption of the report, said experimental work done during the past year confirmed the opinion expressed some years ago that the course of cancer as it could be observed in the laboratory agreed with that which occurred in man, and formed a sound foundation for studying the disease as met with in the human species. So far as their observations had yet gone, they failed to support the view of the endemic character of the disease. Reviewing the work done during the past seven years, it was seen that the investigation into the nature and cause of the disease stood in a very different position now from what it did when the fund was instituted. A large number of the hypotheses regarding the cause of cancer put before them then had been shown to be untenable, and the biological changes which living animal cells could undergo or give rise to, had been closely studied from a new standpoint, opening out a fresh and hopeful field for investigation. In the opinion of the Committee, it was by the free interchange of views and material between the independent workers in cancer research that definite results might be obtained rather than by holding formal conferences in which theories not infrequently played a more important part than facts. Until some general consensus of opinion as to the cause and nature of cancer has been arrived at by those who devoted themselves to the research, it appeared premature to hold a general conference on the question.

Sir HENRY MORRIS (Honorary Treasurer), in seconding the motion, referred to the passing of the old Examination Hall, where the research work had been carried on since its initiation, into new hands. It had been a great feature in favour of this fund that hitherto not a single penny had been spent upon bricks and mortar or upon equipment, but he feared that the time would shortly arrive when it would be impossible to make a similar statement. Owing, however, to the fact that the Royal Colleges had become tenants for the time being of a large part of the Examination Hall, provision had been made for the continuance of the research work in the same quarters for the next three years. After that time it was not improbable that some demand might be made upon the capital of the fund for the purpose of providing a new home for the Imperial Cancer Research Fund. Whether that would be necessary or not he could not predict, but he felt quite sure that the subscribers and donors to the fund might have confidence that, in the event of their having to build, whilst they studied efficiency they would also study strict economy. The resolution was carried unanimously.

Vote of Thanks to Officials.

Mr. GERARD FIENNES next moved a vote of thanks to the Chairman and members of the Executive Committee, the Subcommittees, the Honorary Treasurer, and others who had assisted in the work of the fund during the past year. He could imagine no body of gentlemen to whom the thanks of the public were more justly due. The subscription list for the year showed, unfortunately, that public interest had waned; and, speaking as a layman, he would say that as soon as it was possible, without doing violence to the scientific conscience, it was important that results—even negative results—should be announced. He had never looked for much, he confessed—at any rate, for long years—in regard to the therapeutics of cancer; but if, as soon as the fact was scientifically established, a declaration could go forth that cancer was not hereditary, and not communicable, it would have a vast therapeutic effect on the army of the well.

Mr. L. NEUMANN seconded the motion, which was unanimously agreed to.

Executive Committee.

Sir DOUGLAS POWELL proposed that Professor G. Sims Woodhead be re-elected a representative of the General Committee on the Executive Committee. This was seconded by Dr. ARTHUR NEWSHOLME and carried.

Mr. H. T. BUTLIN moved:

> That the Royal Colleges, having discontinued the appointment of a special laboratories committee, the two representatives on the Executive Committee hitherto appointed by the Laboratories Committee be in future appointed directly by the Royal Colleges, one to represent each college.

This was seconded by Dr. ROSE BRADFORD, and agreed to.

Vote of Thanks to the Prince of Wales.

Sir JOHN TWEEDY, in moving a vote of thanks to the Prince of Wales for presiding, said that the headship of the fund of His Royal Highness was a source of great encouragement, more particularly to the medical and surgical experts engaged in this work, and it was an assurance to the subscribers that the administration of the fund was carried on with due regard to efficiency and economy. But, if he might be permitted to say so, he thought His Royal Highness's presidency of the fund was of greater value than that to which he had referred. For more than 2,000 years, the best minds in the medical profession had been engaged in the study and investigation of cancer. He had no hesitation in saying that since the inception of the fund more progress has been made in the last six or seven years than in the previous ten or twenty centuries. There was no disguising the fact that this recent progress was entirely the outcome of the experimental method, and it was in this respect he thought His Royal Highness's patronage and support was of such great service to the fund and to the community. They could not close their eyes to the fact that there was a small but influential section of the community who disapproved altogether, and under any conditions, of the experimental method. There was, however, a larger and

a more enlightened portion who were willing that this experimental method should be continued under the proper safeguards, not only of efficiency and skill, but of scrupulous considerations for humanity and refinement. The goal at which they were aiming might be distant, but he was confident that they would only reach it by the experimental method.

Sir JOHN MCFADYEAN in seconding the motion associated himself with everything that has been said by Sir John Tweedy. As Chairman during recent years of the Pathological Subcommittee of the fund he wished to corroborate what had been said both by Sir William Church and Sir John Tweedy as to the considerable progress that had already been made towards the final objects of the fund. No one who was acquainted with the scientific reports which had already been published could doubt that for a moment. The motion was passed with acclamation.

The Prince of Wales's Reply.

The PRINCE OF WALES, in reply, said:

Gentlemen,—I sincerely thank you for the cordial manner in which you have supported the vote of thanks so kindly proposed and seconded by Sir John Tweedy and Sir John McFadyean.

Last year circumstances prevented me from attending at our annual meeting, so I am glad to be able to meet you here to-day, and, after listening to Sir William Church's remarks, I think we may congratulate ourselves upon the results of the work of the fund in the past year.

In the report of the Executive Committee reference is made to a petition which was presented by the International Association for Cancer Research in Berlin to His Majesty the King during his visit to Germany. The correspondence which has taken place, and all the proceedings of the Executive Commtitee on this subject, were submitted to me, and I wish now to say that I gave my approval to the decision of the Executive Committee, feeling convinced that the methods adopted by the Imperial Cancer Research Fund of freely distributing their material to workers in every country, of permitting anyone with satisfactory credentials to study our methods in our laboratories, and of encouraging international collaboration amongst the workers in the various cancer laboratories, are the wisest and most efficient means of advancing the study of cancer.

This policy of active laboratory collaboration, as distinct from conferences, has been productive of much good work already, because whilst the fund has achieved a recognition of its position as a National and Imperial Institution, the scientific standing of the staff and the freedom with which it accords assistance to foreign laboratories and workers, are rapidly establishing for it a position of international importance.

When presiding over this Committee on previous occasions, I have expressed the view that immediate results in regard to the cure of cancer must not be counted upon, but that rather we must look forward to steady and consistent progress in accordance with the experience of all scientific investigations. There can be no doubt, however, that the seven years' work already accomplished by the Imperial Cancer Research Fund has brought about a complete change in the standpoints from which cancer should be studied. The many and varied lines of research are being pursued with the utmost perseverance, and every development, as it occurs, is followed up with the minutest care. During the past year an important work—the Third Scientific Report—has been issued from our laboratories, and has been received with high appreciation by all those at home and abroad who are competent to express opinions on these highly technical researches. This, of itself, marks a steady and valuable advance, and one of which we have every reason to be satisfied.

The number of applicants to work under the General Superintendent, coming as they do from all parts of Europe, from the United States, as well as from Japan, is evidence of the high value which is attached to the work in our laboratories.

The Honorary Treasurer calls attention to the fact that again the expenditure has exceeded the year's receipts, and that there is now an overdraft at the bank. Looking to the possible duration of these researches, the realization of capital is to be deplored, but this will be unavoidable unless further assistance in the shape of annual subscriptions and donations is forthcoming.

In conclusion, I offer my best thanks to the Chairman and members of the different committees, and also to Dr. Bashford, our Director, and his colleagues, for the valued services rendered by them during the past year.

The proceedings then terminated.

MEDICAL AND SURGICAL APPLIANCES.

Portable Operation Table.

MESSRS. ALLEN AND HANBURYS, Limited, have made to the design of Dr. Comyns Berkeley a portable operation table, which they state can be opened and fixed in position or folded up again in less than one minute, and will be found equally useful for operating in the Trendelenburg or the lithotomy positions. The table is made of oak, the measurements being: Length, 48 in.; width, 21 in.; height, 32 in.; weight, 31 lb.; it has been tested to take patients weighing up to 20 stone. It is claimed that the mechanism by means of which the top is raised and lowered is very simple, and works very easily.

Knee Support.

Major Gunter, R.A.M.C., has designed an apparatus to keep the knee flexed and rotated during the operation for the removal of cartilage from the knee-joint. It consists of a movable leg rest working on a rachet, which enables it to be extended or flexed as required. On either side of the leg rest are handles to which the leg is bound by a bandage rotating the knee inwards in case of removal of the external cartilage, and outwards in case of the internal. At the back of the apparatus is a movable support for the leg piece, by means of which the leg piece is raised or lowered according to the length of the thigh, and is fixed to the required height by means of a fixation screw. The support can be lowered until it is in the same plane as the rachet frame, but it cannot be raised beyond a right angle. The appliance is made by Messrs. John Weiss and Son.

X-ray Outfits and Accessories.

We have received from Messrs. Siemens Bros. and Co. (Limited), Caxton House, Westminster, S.W., two supplements to their electro-medical catalogue of June, 1908. The first of these treats of *x*-ray outfits with rotating high-tension rectifiers—a method of working with which radiologists have recently been made familiar, and which dispenses with induction coil and interrupter. The rectifier is coupled with the alternating current generator in such a manner that commutation takes place in synchronism with the frequency of the alternating current itself, and a supply of continuous pulsating current is obtained. The second supplement deals with new protective devices and accessories for *x*-ray work. Perhaps the most interesting of these is the examining chair made to the design of Dr. Levy Dorn and Dr. Loos. The patient is supported in such a manner as to prevent movement, and an oil pump which is built into the massive base of the chair enables the observer to bring it up to any required height; there is also adequate provision for the adjustability of the fluorescent screen. Messrs. Siemens have issued a further note on some successful experiments with a stereometer for localizing foreign bodies in the eye.

The Earth-free "Multostat."

Many electro-therapeutists are now pointing out the advisability of absolutely earth-free apparatus for the medical uses of the electric current. The Sanitas Electrical Company, Limited (61, New Cavendish Street, W.), have issued a pamphlet entitled "The Book of the Multostat," in which they describe the uses of their universal apparatus in its new earth-free form. Cases of shock to patients following upon an earth connexion which has been brought about by a slight accident are by no means unknown, and an apparatus in which the necessary precautions have been taken to prevent the danger of leakage to earth will doubtless find a wide circle of appreciation. In the earth-free "Multostat" an arrangement is made whereby the usual motor transformer is wound at the same time as a dynamo, and all the currents used are entirely derived from the motor-dynamo and are independent of the main. On its small base the instrument permits the use of the different currents for most of the approved methods of electrical treatment, including galvanization, sinusoidal-faradization, as well as for the working of cautery appliances and surgical lamps. A word of praise should be added for the readable manner in which the firm have compiled their catalogue.

THE MEDICAL TREATMENT OF SCHOOL CHILDREN IN LONDON.

IT will be remembered that in July, 1907, the London Education Committee appointed a special subcommittee on the treatment of school children, and that this committee presented both a Majority and a Minority Report, which was published in the BRITISH MEDICAL JOURNAL of December 26th, 1908, p. 1869 et seq.

Arising out of this report, the recommendations finally submitted to the County Council were:

(*a*) That, as the existing provision of private and hospital practice sufficiently meets the requirements in the case of children requiring operative and in-patient treatment (who are thus removed from the direct purview of the educational authority), no further steps be taken in respect of this class.

(*b*) That to supply the additional provision for the medical treatment of school children which has been found desirable, the Council should utilize institutions of the types now existing, giving financial help, if necessary, and receiving special facilities in return for any grant of public money, but that in districts where no suitable institution exists, and where within a reasonable time it shall have been found impossible to make the necessary provision by an extension of existing institutions, the Council should consider whether, in default of other means, it shall make the provision itself, and that it be referred to the Education Committee to report further on the matter.

Recommendation (*a*) was approved by the Council on March 30th,[1] but on April 10th Recommendation (*b*)[2] was referred back to the Education Committee in accordance with the following resolution:

> That notwithstanding the declaration of the Prime Minister on March 18th that the Council cannot expect to receive any increased grants from imperial funds towards the cost of medical treatment of children in the London schools, this Council, being of opinion that certain of the diseases referred to in the foregoing reports are of such a nature as to justify their medical treatment by the education authorities, refers the recommendation back to the Committee to report as to the estimated cost of the treatment of each of these diseases, as to the degree to which they affect the educational efficiency of the schools, as to the steps which should be taken to give effect to this resolution, and also as to the steps to be taken to secure such an amendment of the Education (Administrative Provisions) Act, 1907, as will enable local educational authorities to recover the costs of such treatment from parents who are in a position to pay for it.

The committee also had before it a memorandum from the Finance Committee,[3] asking for full information, and enumerating a number of points to which the Education Committee should give full consideration. On May 19th[4] the Education Committee reported that it was prosecuting inquiries in respect of eye, ear, and skin ailments, but had postponed for six months the consideration of the question of the treatment of teeth. Though the Education Committee has not been able to complete its inquiries with regard to the three selected ailments, it considers that, in view of the nearness of the long vacation and the urgent need which exists for the treatment of these ailments, it is desirable to present to the Council the following preliminary report, which was discussed and approved by the committee at its meeting on Wednesday last, July 14th.

REPORT OF EDUCATION COMMITTEE.

The inquiry which has so far been conducted has been directed towards ascertaining (1) the number of children affected, and (2) what the hospitals would be prepared to do in the way of treatment. With regard to (1), we have had before us a return furnished by the medical officer (Education) showing the number of children known to be suffering from bad vision and ringworm, and the estimated number of existing cases with aural discharge. A summary of this return is subjoined:

Number on roll, 740,728.	
Discharging ears	14,782
Bad vision	25,950
Ringworm	3,014
	43,746

With regard to the hospitals, we caused a letter to be sent to fifty-six hospitals which deal with eye, ear and skin ailments, explaining the object which the Council has in view, and asking how far their existing organization would enable them to deal with increased numbers of child out-patients of the character under consideration, and as to the maximum number of children from the schools who could be received per week, the manner in which they would have to be distributed, and the conditions upon which the hospitals would be prepared to co-operate with the Council.

Replies have been received from thirty-nine hospitals. These are set out in the statement appended to this report,[5] and may be divided into four categories, as follows:

(i) Those which have not expressed any desire to co-operate with the Council. There are six in this category.

(ii) Those which have expressed sympathy and are anxious to co-operate with the Council as far as their present accommodation, staff, and so on, permit. In this category may be placed four children's hospitals and six other hospitals. The authorities of the four children's hospitals included in this category discussed the subject at a conference attended by representatives of eight children's hospitals, when the following resolution was adopted:

> That, while prepared as charitable institutions to do all in our power for the good of the school children, so far as the means at our disposal and the rules under which the hospitals respectively are governed will permit, we are not prepared to accept a grant of money from the L.C.C., or to give preferential treatment to the children sent by them, or to admit supervision or inspection by the officers of that body.

(iii) Those which have expressed sympathy, are willing to co-operate so far as their accommodation and staff permit, and have specifically stated that they can take more cases per week. In this category there may be placed at present six hospitals. There is reason to believe that as time goes on the number of hospitals in this category will be largely increased.

(iv) Those which have expressed sympathy, are willing to co-operate, can take a larger number of cases than at present, and are prepared to accept a money payment. There are sixteen hospitals in this category. The tabulated statement shows that the proposals as regards payment very greatly.

We find that, generally, the hospitals are very sympathetic and willing to co-operate, and we think that the Council is greatly indebted to them for the attitude which they have taken up in the matter.

There is a general feeling that the Council should not ask for any special privileges for the children for whom the hospitals may be prepared to provide treatment, although some of the hospitals have expressed their willingness to afford facilities of a special kind. The replies also indicate that the hospitals would be opposed to any interference from the Council in respect of the treatment or of the management of the hospitals. These conditions apply both to hospitals which desire no payment and those which ask for financial aid. We agree with the views of the hospitals in these respects, and are strongly of opinion that responsibility for treatment should rest on the hospitals alone.

It will be seen from the statement appended to this report[5] that there are six hospitals which are prepared to treat additional cases free of charge. We are of opinion that the offers of the authorities of these hospitals should be accepted, and that the thanks of the committee should be conveyed to the authorities. We would arrange that, as far as practicable, every child should be accompanied by its parent, and that the cases selected on any one day should, as far as possible, be selected in such a manner as to avoid placing upon any one department of the hospital a pressure which it would not be able to bear. We propose that the following procedure should be adopted: The children should be selected by the medical officer and cards sent to the parents indicating the nature of the ailments from which the children are suffering, together with a circular letter from the head teachers suggesting that medical advice be sought. If the parents intimate that they are unable to secure the necessary treatment by the ordinary means, suitable arrangements should be made for the children to attend the hospital. The lists should be sent to the children's care committees in order that they may interview the parents where desirable. If such arrangements

[1] BRITISH MEDICAL JOURNAL, 1909, vol. i, p. 857.
[2] Ibid., p. 914.
[3] Ibid., p. 857.
[4] Ibid., p. 1264.

[5] An abstract of this statement will be found at the end of the report

were to be put into practice at the six hospitals in question, provision could be made for dealing with 460 new cases a week, or 20,000 a year. These hospitals, however, would provide for a larger number of eye cases than for either ear or skin cases. We are of opinion that we should be empowered to enter into negotiation with three, or, if necessary, more, of the hospitals which are prepared to deal with such cases if financial aid is given.

It has been intimated by certain hospitals that if they undertake more work in the way of treatment of school children they will have to increase their staff of medical assistants, nurses and porters. We consider that a payment of £50 a year for each additional medical assistant working for one half-day a week, together with a sum of 2s. for each child treated, would be a reasonable payment, and we are of opinion that these figures should form the basis for negotiation with the hospitals in question.

The cost of the scheme will be dependent upon the result of the negotiations, and we are not, therefore, in a position to report the financial effect of our proposals at the present stage. The result of the negotiations will be reported to the Council when completed and the necessary authority will be sought to incur expenditure which may be involved.

We think that these arrangements will secure medical treatment for as many children as may be selected for treatment by the school doctors at present, and we have some confidence that as the numbers of children selected by the school doctors grow other hospitals will find themselves able to co-operate with the Council.

With regard to the suggestion of the Finance Committee that full information should be submitted to the Council in respect of the financial effect of any scheme for the medical treatment of children, we are convinced that reliable data upon which to base a complete estimate of the cost of medical treatment of children can only be obtained after further experience has been gained as to the results of medical inspection, and of the extent to which treatment will be provided privately at the expense of the parents or free by hospitals. We are of opinion that if arrangements are made with the hospitals which are prepared to provide the treatment free of charge, and with the hospitals in respect of which we ask for authority to negotiate as to financial terms, we shall be in a better position to ascertain the numbers for whom public provision is necessary and the total additional cost which will be involved.

RECOMMENDATIONS.

The recommendations of the report were that the offers of the Central London Ophthalmic Hospital, the London Hospital, the Paddington Green Children's Hospital, the Queen's Hospital for Children, Hackney, the Royal Westminster Ophthalmic Hospital, and the Victoria Hospital for Children, Chelsea, to provide medical treatment free of charge for school children whose parents are unable to obtain suitable medical treatment by ordinary means, be accepted, and that an arrangement be made to secure the medical treatment of children at the hospitals named and at such other hospitals as may be willing to treat children attending public elementary schools without financial aid from the Council. It was also recommended that the committee should be authorized to enter into negotiations (i) with three hospitals to provide medical treatment at the out-patients' department for children attending public elementary schools whose parents are unable to obtain suitable medical treatment by the ordinary means, for a payment not exceeding £50 a year for each additional medical assistant (working one half-day a week) required to be engaged for the treatment of such children, together with a sum of 2s. for each child so treated to cover the other expenses incurred by the hospitals; and with, if necessary, (ii) the authorities of other hospitals who may be prepared to undertake such treatment on similar terms; and that the Education Committee do submit a report upon the results of such negotiations in due course.

ABSTRACT OF STATEMENT SUMMARIZING REPLIES FROM HOSPITALS.

1. *Hospitals which have not expressed any desire to co-operate with the Council.*

Grosvenor Hospital; ceased to treat children on December 31st, 1908.

Her Majesty's Hospital (Dr. Barnado's Homes); fully occupied.

Kensington Dispensary and Children's Hospital; resources available by use of governors' letters.

University College Hospital; declines, as the proposals would be likely to disorganize the working of the hospital.

Royal Free Hospital; accommodation insufficient to treat additional children.

Western Skin, Great Portland Street; unable to make definite arrangements.

2. *Hospitals which are sympathetic and are anxious to co-operate as far as conditions will permit, but are unable to accept financial aid.*

Belgrave Hospital for Sick Children
East London Hospital for Children, Shadwell
Evelina Hospital
Royal Waterloo Hospital
— Four of the eight hospitals which adopted the resolution at the conference.

Guy's Hospital
Italian Hospital
Metropolitan Hospital
— Will do all in their power for the good of school children within the regulations of the hospital.

King's College Hospital; unable to co-operate in present premises.

London Temperance Hospital; subject to available accommodation and suitability, any case sent by a responsible teacher or manager of schools in the immediate neighbourhood will be received.

St. Thomas's; anxious to assist the Council and is prepared for the continuance of school children as at present, but accommodation and present staff will not permit of any organized addition to the number of cases now attending.

3. *Hospitals willing to co-operate and to take additional cases.*

Central London Ophthalmic; 20 cases daily, six days a week and probably a larger number when the new hospital is erected; the hospital almoner would make his own investigations, in addition to any made by the Council.

London Hospital; will take 15 aural cases a day and 15 ophthalmic cases a day on four days a week, and 15 or 20 skin cases a day on two days a week; 3d. a week charged to each patient for medicines and dressings. It is added that the average cost of an out-patient is 1s. 9d., not including the cost of special appliances, such as spectacles. The children of parents who can afford to pay a doctor should be sent to a private practitioner, unless the ailment is one not dealt with by ordinary practitioners.

Paddington Green Children's Hospital*; will take 20 opthalmic cases a week.

Queen's Hospital for Children, Hackney*; will take 400 refraction cases, 2,500 discharging ear, and 900 ringworm cases annually.

Victoria Hospital for Children, Chelsea*; is prepared, as an experiment for six months, to take 25 cases a week, to be sent at times suitable to the hospital.

Royal Westminster Ophthalmic Hospital; will take 10 cases a day, or 60 a week, but asks that they should be sent in the same organized way as to the Children's Hospital, Great Ormond Street.

Hospital for Sick Children, Great Ormond Street; the following arrangement was in force with this hospital but terminated on July 8th, 1909: it was prepared to receive 10 aural and 10 ophthalmic cases a week on the following conditions: (*a*) That, as far as practicable, every child shall be accompanied by its parent. (*b*) That the cases attending on any one day shall be selected in such a manner as to avoid placing on any one department of the hospital undue pressure. (*c*) That the above arrangement continues for a period not exceeding six months, and that it may be determined by the committee at any time.

4. *Hospitals which have expressed sympathy, are willing to co-operate with the Council, can take a larger number of children than at present, and are prepared to accept payment.*

Blackheath and Charlton Cottage Hospital; admits children under 12 free, but charges other out-patients 3d. an attendance, has no ophthalmic department and no *x*-ray apparatus, but is prepared to take children from neighbouring schools for teeth and other ailments.

Charing Cross Hospital; is prepared to receive 1,000 refraction, 300 to 350 skin and 1,000 throat and ear cases a year, asks for a grant to cover expenditure estimated at £500 a year. The children must pass the hospital almoners, and the payment by the Council is not to entitle it to representation on the governing body nor to interference of any kind.

German Hospital, Dalston; will take cases of defective vision on payment based on the fact that subscribers are entitled to recommend 6 out-patients for one guinea.

Great Northern Hospital; will make ophthalmic, aural and skin departments available to the Council at specified times; it is estimated that one ophthalmic and one aural assistant could each probably deal with 40 new cases a week, working for two hours a day for two days a week, 200 ringworm cases might be taken yearly, making a total of about 3,700 new cases a year, based on payment suggested at 2s. a head, and £100 each a year for special assistants.

* One of the hospitals which adopted the resolution.

Hospital for Diseases of the Skin, Stamford Street; would take 6 cases a week at 10s. a case.

Hospital for Diseases of the Throat, Golden Square, asks time for further consideration, but has suggested 150 cases a week, at the rate of 5s. a patient a week, and 1s. 6d. a day if detained for a longer period.

National Antivivisection Hospital, Battersea; is willing to fall into line with other hospitals, but a payment of not less than 1s. a head would be required.

Poplar Hospital for Accidents; does not take medical patients, but offers the use of a room or rooms at a fair rent.

Royal Eye Hospital, Southwark; proposes a special elementary school eye department taking 30 cases a day for each assistant, accommodation for 5 assistants could be provided, terms suggested are £500 for equipment and £50 for each half-day assistant.

Royal Ear Hospital, Soho; suggests that the Council should make an annual subscription of 200 guineas, which would enable the hospital to take about 200 out-patients and 100 in-patients a year.

St. George's Hospital; refers to the difficulties of the voluntary basis of the hospital and is anxious not to interfere with work of general practitioner; would take Council's patients after ordinary hours in skin, throat, and eye departments on one day a week each, and possibly ears on a fourth day. Out-of-pocket expenses, estimated at £400 a year, to be guaranteed, leaving the question of capitation fee to be considered.

St. John's Hospital for Skin Diseases, Leicester Square; will undertake 20 cases a week at 10s. a case, or the whole of the estimated 3,000 ringworm cases a year for £1.000 inclusive.

St. Paul's Hospital for Skin Diseases, Holborn; services of seven specialists free, Council to pay £100 for *x*-ray apparatus, and at the rate of 1s. for each application, and in addition 6d. per attendance for supplementary treatment until cost of electricity, incidental expenditure, and drugs reaches the capital amount the Council has laid down.

Seamen's Hospital, Greenwich; considers that doctors should be recompensed for the time spent, though they would probably be willing to give their services if financial help were accorded to the hospital, but its position in this respect does not at the present time permit it doing additional work or incurring additional expenditure.

West London Hospital; not unwilling to co-operate in a well-thought-out scheme, but out-patient department is at present fully occupied, so that no large addition of school patients could be treated without structural alterations.

Western Ophthalmic Hospital, Marylebone Road; would take 100 to 150 patients a week if a salary of £100 a year was guaranteed to a refraction assistant.

In discussing the report, Mr. GRAHAM WALLAS said it was a lamentable thing that the only result of the labours of the committee should be that certain hospitals would go on treating the children, but without giving any privileges either to the children or the Council. Would the Council have risen to its responsibilities if it relied only on out-patient departments, where the children would have to wait eight, nine, or ten hours for treatment?

Miss ADLER and the Rev. STEWART HEADLAM asked what was to be done in the districts where no hospitals existed, and received the reply from Mr. JAY, the Chairman of the Subcommittee, that the Children's Care Committees were to be asked to arrange for taking those needing treatment to the central hospitals.

Dr. BEATON remarked that the alternative was between hospitals and clinics. He thought the Council had decided wrongly, but the committee must go on with these proposals and make the best of them. He wished the hospitals could have been given more reliable data as to the number of children requiring treatment; different estimates presented by committees of the Council varied very greatly. Had the point of view of the general practitioner been considered? If the hospitals took patients who could afford to pay, the general practitioner had a right to complain. The Council should take special measures in this matter.

Mr. LEON thought that negotiations should be entered into with dispensaries as well as hospitals, but after discussion this suggestion was referred to the committee, Dr. BEATON pointing out that it would not be desirable to recognize all dispensaries.

Ultimately the recommendations were approved.

THE committee of the Children's Sanatorium at Holt for the treatment of phthisis has received a gift of £300 *in memoriam* M. T., as a contribution to the fund of £6,000 which it is seeking to raise for the erection of a permanent building.

THE REJUVENESCENCE OF BATH.

BATH is the only thermal spring in England, and one of the oldest in Europe. It both profits and suffers by reason of its antiquity; it profits because every one knows Bath at least by reputation, it suffers through a not unnatural disposition among the City Fathers to stand in the ancient ways. As the immense popularity of the city as a health resort in the later part of the eighteenth century was no doubt in part due to fashion, its decline in the nineteenth may perhaps be traced to a caprice of that fickle goddess, but it coincided with the immense development of sport and of the country house habit which that century saw, with the growth of foreign spas both in number and in the attractions they offered, and with the improvement in ease and rapidity of travel which made so many of these spas very accessible and therefore serious rivals to Bath, as to all other British waters. For generations Bath made little effort to retain or regain its popularity, but during the last thirty years or so it has begun to move with the times, and an interesting addition to the advantages it now offers was opened by Sir Malcolm Morris on July 10th.

For a good many years there has been a scheme in existence for providing a colonnade and drinking place, where the waters could be taken in the open air, as is commonly possible at foreign spas. The conditions to be fulfilled were much the same in Bath as at, for instance, Vichy; that is to say, that the drinking place should be protected from the weather, and that there should be a garden near at hand; in Vichy the protection is perhaps most required from the sun, and at Bath, as at other English spas, from the rain, but this is really a matter of detail.

The place selected at Bath is the colonnade under the Empire Hotel. This colonnade is approached through the Institution Gardens, which are prettily laid out, and may, when more fully developed, be a very agreeable drinking place. The water has been brought to the fountain in a double system of pipes, the inner one of iron prepared to resist corrosion, the outer of earthenware, an air-tight chamber being thus formed to act as a non-conductor retaining the heat of the water in the inner main. The alcove has been lined with decorative tiles in green and cream, and in it is the fountain and a serving counter, in the construction of which three arches from the famous Melfort Cross, erected in Bath in 1687, are used as panels. The whole arrangement is on quite a small scale, and though a move in the right direction, should be regarded only as a first step. Only part of the colonnade is used, and the remainder, which turns by the side of the river, is still little better than a lumber place. There are, however, possibilities about it and about the gardens which will no doubt appeal to the local Branch of the British Medical Association and to the Chamber of Commerce, which, with the assistance of the Medical Advisory Committee, are credited with having brought about the present improvement.

Sir Malcolm and Lady Morris were received in the colonnade by the Mayor, the Chairman of the Baths Committee, the Chairman of the Chamber of Commerce, and members of the city council and of the medical profession.

The MAYOR, in opening the proceedings, said that the Corporation was a progressive body, as was evidenced by the fact that the place where the ceremony was taking place was only a few years ago covered with ruinous, unsightly, and insanitary buildings. The suggestion to establish an open-air drinking fountain had been warmly supported by the local medical men, and its accomplishment represented the fulfilment of the first part of the programme which the Chamber of Commerce had put before the council.

Sir MALCOLM MORRIS, referring to the pageant to be held next week, said that there had been a period since the last episode in the pageant—the visit of Queen Charlotte—during which Bath must have lain dormant. Its modern revival dated from 1878, when a large meeting of members of the medical profession was held there, and since then much progress had been made. It was sometimes said that the good results of spa treatment were due to change of air, food, and scene, and absence from work; but that opinion was contrary to the experience of those who practised in diseases of a chronic character, who

knew that the good results of spa treatment were due to taking a particular kind of remedy or immersing the body in a bath. He could vouch from his own personal experience that this was true of Bath. He had never been able to understand why Bath should be considered a winter resort only; if, however, people were to go to Bath in the summer as well as in the winter, it would be an enormous advantage to be able to take the waters in the open air and walk about in the delightful gardens in which the fountain had been erected.

The water was then turned on, and Sir MALCOLM MORRIS, having drunk the first glass, declared the fountain open.

A vote of thanks to Sir Malcolm Morris was then moved by Alderman OLIVER, Chairman of the Baths Committee, and seconded by Mr. EGBERT LEWIS, Chairman of the Chamber of Commerce.

Afterwards the company were entertained at luncheon at the Guildhall by Dr. and Mrs. Mackenzie.

Dr. RICHARD CARTER, in proposing the health of Sir Malcolm Morris, gave a history of medical events in Bath during the last thirty or forty years, and congratulated the city on having constructed an open-air fountain without committing any act of vandalism or wounding the feelings of the antiquarians. The improvement was due to the efforts of the Baths Committee, the Chamber of Commerce, and the local Branch of the British Medical Association.

Sir MALCOLM MORRIS, in the course of his reply, expressed some very definite opinions, which, both by the applause with which they were received and from the subsequent speeches, appear to have struck a responsive note. He said: I have a message to give to you, and that is a message from the medical men, not only of Bath, but of this great country—that you, the Corporation of Bath, should do your duty for the benefit of your fellow creatures, not by dawdling on year after year in your expansions, but act, and act quickly. If you will take that message from me, Mr. Mayor and Corporation, and don't be so slow in your improvements, you will rival the great spas of Europe in a way that no other place can. But you always think, and you talk for hours and hours upon ways and means. You spend your time considering as to whether this thing will pay or that thing will pay, but I tell you as an outside medical man you have a public duty to perform to the nation, and not to your own town only. You have no right to let millions of gallons of healing water to run to waste every summer; your duty is to use it. If the water contains some material (I know not what it is) of benefit to human beings, you have no right to let it run to waste into your river. It is your duty to use it, and quickly. You have all the things to your hand. Why in Heaven's name can't you do it, and do it properly, and at once? I am an outsider; I have nothing to do with Bath and its rates, or with your inside petty jealousies and squabbles, which I take it exist in every provincial town in the world; but you have a national duty to perform. You possess—and Heaven knows why you possess it, but you do possess it—the Almighty has given you a remedy for the cure of chronic diseases, and yet you don't supply a sufficient amount, and sufficient attractions for the people who should use it. Now I have delivered my message; I have said what I think as an outsider. I have delivered my message as a medical man practising in particular branches of medicine. I have delivered my message—it is your duty to do something in return. The medical men of the town cannot do much. They will treat the patients when they come. How can they force the Corporation to do anything? We who are free lances and live outside, we can tell you what your duty is, and what you ought to do. That is my mission to-day, and I have done my duty to the best of my ability.

The CHAIRMAN OF THE CHAMBER OF COMMERCE proposed the toast of "The Mayor and Corporation," which was acknowledged by the MAYOR and the TOWN CLERK. Mr. H. T. HATT proposed the health of Dr. Mackenzie, who, in a brief reply, said that Bath had been warmly praised by the French balneologists who visited the city last October. It was strange that Bath, the only winter spa in the country, should be the only winter spa in the world without a winter garden, a defect which he hoped would shortly be remedied.

INTERNATIONAL ANTIVIVISECTION CONGRESS.

THE International Antivivisection and Animal Protection Congress, said to have been supported by 200 British and Foreign Societies, was held in London under the presidency of Sir George Kekewich, K.C.B., M.P. The proceedings began on July 6th and ended on July 10th. We give, in the form of a running narrative, a brief summary of the proceedings, condensed from the reports published in the *Times* and other newspapers.

President's Address.

In the PRESIDENT'S opening address he said they had to rouse the people from their lethargy. Their chief hope was not in the idle rich but in the workers, and there were signs that that hope would be fulfilled. Every member of the Labour party in Parliament was on their side. There were other signs that their cause was progressing. They had a Royal Commission, but he did not anticipate much practical result from its labours, because it did not represent fairly the two parties in the matter; but it showed that the public mind had been directed more than ever before to the cruelties of vivisection. The advocates of vivisection had taken alarm, and had established a society for its protection. That society was supported by members of the medical profession and by the wealthy. The former saw their profits in danger; the latter swallowed with avidity the fairy tales of the medical pseudo-scientists who told them that the holocaust of tens of thousands of unfortunate animals bled to death and cut to pieces would result in discoveries which would enable them to enjoy their lives and their wealth a little longer. There was at least one hospital which was clean of cruelty—the Battersea Hospital—which afforded evidence that the medical profession were not all on one side. Some opponents of vivisection were called extremists—he was one himself—because they would accept nothing short of the total abolition of the practice. Some thought they could arrive at the same goal more easily if they took any concession that was offered, asking for more when they had the chance. Some were interested in the question of cruelty apart from vivisection. Some, again, were opposed to cruelties in sport. Others regarded with detestation the export of broken-down horses. Others would put an end to the horrors of the slaughter-house. But they all agreed in this, that pain and torture must no longer be inflicted on helpless creatures, and that if life must be taken, it must be taken by the most humane methods. He suggested that a central committee should be formed, on which there should be a representative of any society who chose to join, and that the work of that committee should consist in making arrangements for holding each year a number of large public meetings throughout the country.

Antivivisection and Democracy.

Mr. CHRISTIAN TENOW, President of the Scandinavian Antivivisection Society, gave an account of the movement in Sweden during the last four years. Dr. SANCHEZ DE SILVERA, of Nantes, read a paper entitled, Le besoin de démocratiser nos idées et nos sociétés protectrices.

Medical Antivivisectionists.

Dr. HERBERT SNOW said it was the special function of the Medical Antivivisection Section to enlighten the public mind on technical points in the colossal imposture drama which was being played throughout the world, and to demonstrate the futility of experiments on the living animal, their utterly unscientific character, and the terrible waste of energy, talent, time, and public moneys which the practice involved.

Dr. ALEXANDER BOWIE looked to the section to prove by demonstration that they derived very little of consequence from vivisectional experiments. When they had proved to the lay mind, as they would be able to do, that all their great discoveries had been based upon legitimate and logical reasoning, they would have put an end to the vivisection system.

Dr. HELEN BOURCHIER, speaking of "experiments of the nature of simple inoculations," said a more wicked and misleading title it would be impossible to conceive. The injection in itself was nothing; the effect of the substance injected was the real "experiment." The result of these

"simple inoculations" in the animals experimented upon was a lingering death by a painful wasting disease.

Dr. HERBERT SNOW, speaking of cancer research, said that no progress, whether of practical or abstract scientific value, could take place through experiment on the lower animals.

Dr. STENSON HOOKER said vivisection had had its trial and had been found wanting.

After the reading of a paper by Dr. ROBERT PERKS, a resolution was passed declaring that vivisection in no way furthered the true progress of medicine and surgery.

Dr. JOSIAH OLDFIELD read a paper on the Principles of Healing and the Practice of Vivisection, in which he said vivisection was contrary to the spirit of medicine, because vivisection as such took no note of pain; its object was not to relieve pain in the victim but to cause it.

Parliamentary Antivivisectionists.

At a meeting of the Parliamentary Antivivisection Section, presided over by Sir GEORGE KEKEWICH, Mr. CATHCART WASON said the movement did not progress so rapidly as they would wish in Parliament, because the Government always put off the opponents of vivisection by saying that they could do nothing till the Royal Commission had reported. Mr. GEORGE GREENWOOD moved:

> That this meeting cordially supports the formation of an International Parliamentary Antivisection Committee for the purpose of facilitating international legislation on the subject of vivisection.

He was convinced that the Report of the Royal Commission must be followed by legislation.

Sir ROBERT PERKS, in seconding the motion, said he did not know of a single great discovery in medical science which could be directly traced to the practice of vivisection. Even if it could be shown that human life had been lengthened or human suffering to some extent palliated by the infliction of pain upon the brute creation, he would say it was an indefensible argument in favour of the custom. It must have upon those who practised it a debasing and degenerating influence. They must federate with men and women in different countries to further their cause. Dr. QUIDDE, a member of the Bavarian Parliament, and others supported the motion, which was adopted.

Legislation as to Cruelty to Animals.

MRS. BESANT moved a resolution asking the Governments represented in the congress to repeal all legislation that involved cruelty to animals. She asserted that if all the practices of the laboratory were fully known the people would rise up and sweep them away. But the vivisectors took good care to hide their proceedings under the veil of secrecy. She asserted that laboratory experiments did not stop with animals.

Mr. W. T. STEAD said he would have a cinematograph reproduction of all the phases of an experiment in the laboratory, with a phonographic attachment which would reproduce all the moans and groans of the animal operated upon. Further, he would compel all vivisectors to be vivisected themselves before they were licensed to experiment on animals. The resolution was carried.

Concluding Meeting.

Miss LIND-AF-HAGEBY, the Honorary General Secretary, said the congress had been called in a broad spirit. There were two kinds of restrictionists on the question of vivisection. One desired to see it abolished, but believed that this could best be achieved by the step-by-step policy which took different forms in different countries, though she maintained that these so-called restrictionists were really abolitionists at heart. The other kind of restrictionist was the man or woman who believed in the necessity of vivisection but was not yet fully awake to its iniquities. It was with regret that she had to refer to an unfortunate split in this country, which would produce another congress. The other party did not agree with their broad principle; it declared that no one should be allowed to enter its congress who was not a total abolitionist. That might be a logical position from the more narrow point of view, though she did not agree with it from the point of view of a useful, educational, and united congress. That party had throughout the winter circularized people all over the country, declaring that she and her party were shams and humbugs, who did not really mean to help the animal world. That was deplorable, and something which they could not condone. Since the delegates to the congress arrived they had been inundated with letters containing erroneous statements, personalities, and allegations which should be foreign to any humane cause. She could not understand the spirit of any worker in the great cause of mercy who could not to his enthusiasm for animals add a little charity towards his human fellow workers. The congress had been called in the name of the World League—a federation of societies existing on the Continent. It had the support of some American societies, and the English branch of it was originally introduced into this country by Miss Woodward. Miss Woodward had since the date of the last congress resigned from the committee, but the World League was never dissolved, and it was that league which had undertaken the organization of the congress. Meanwhile, Miss Woodward and others decided to go on with another congress. The time had arrived when they felt that they could not work with those who approached these vital questions in a spirit of bigotry and intolerance towards fellow-workers. They therefore felt the necessity of reconstituting the old World League, as represented by the head quarters now in England, into an organization which would be broad enough and sane enough to include all societies which were represented and had given their support to that congress. Miss Hageby moved:

> That this congress reconstitute the old World League into an international federation, to be called "The International Federation of Animal Protection and Antivivisection Societies," and that the congress appoint a commission to draw up the articles of association.

Dr. QUIDDE moved an amendment to omit all reference to the World League, and to constitute the congress into an international federation. This was lost. The motion was then agreed to, and a committee was afterwards elected to draw up the articles of association.

Procession.

A procession to Hyde Park took place in the afternoon. Among the institutions represented were our Dumb Friends' League, the Incorporated Parliamentary Association for the Abolition of Vivisection, the National Antivivisection Hospital Ladies' Guild, the Friends' Antivivisection Association, the League for the Abolition of Vivisection, Vaccination, and Inoculation, and the South-West London Antivivisection Society. There was no disturbance. In Hyde Park speeches were delivered from three platforms. Sir George Kekewich, who presided at one of these, was interrupted by some one who called upon him to speak the truth when he said vivisection made medical men callous, and desire to experiment on men as well as on animals. Sir GEORGE KEKEWICH replied that they already practised upon working men in hospitals. He was thereupon asked to substantiate his "dirty lies," and the interrupter denounced his statements as "a blackguardly insinuation against a great profession." Mr. CUNNINGHAM GRAHAM characterized vivisection as an abominable system which had produced no good results. A resolution was put and declared to be carried at each of the platforms to the effect that vivisection is morally indefensible and calling upon Parliament to repeal the Act of 1876.

THE PROTECTION OF ANIMALS.

Slaughterhouses.

A section of the congress was devoted to slaughterhouse reform. It was presided over by Mr. ARTHUR LEE, M.P., who said they must devote all their efforts to trying to get rid of private slaughterhouses. Mr. J. LINDSAY, President of the London Butchers' Trade Society, said there was no institution which was more thoroughly inspected than the private slaughterhouse. There was less cruelty in the slaughterhouses than there was on any one day on Blackfriars Bridge, where one constantly saw horses struggling with heavy loads.

Bird Slaughter.

Mr. ERNEST BELL, representing the Royal Society for the Protection of Birds, said, in regard to birds which were migratory, some international agreement was necessary. The following resolution was passed:

> That, in the opinion of this congress, it is essential that united international action should be taken with regard to the export and import of plumage for millinery purposes.

Docking of Horses.

Mr. J. L. OSBORN (Bristol) moved a resolution:

That docking, being a cruel and senseless fashion, should be forbidden by law.

Docking was ugly, ridiculous, and cruel. The resolution was carried.

Pit Ponies.

Mr. W. H. PICKERING, Chief Inspector of Mines for Yorkshire and Lincolnshire, read a paper on "Pit Ponies," and a resolution was carried to the following effect:

It is desirable to direct attention to the treatment of animals working underground in mines, with the objects of preventing cruelty, improving the conditions under which they work, and educating the drivers, horsekeepers, and other persons who have the control of animals underground.

Sport.

Mr. GEORGE GREENWOOD, M.P., in an address on Sport, said he believed that, as thought and true civilization advanced, it would be recognized that to seek pleasure in the hunting of any animal to its death was unworthy of a thinking and humane man. Other speakers dealt with the horrors of the seal trade, and a resolution in favour of a boycott of its products was passed. Cruelty to performing animals in music halls and other places was also discussed.

SERMON BY ARCHDEACON WILBERFORCE.

On Sunday, July 11th, Archdeacon Wilberforce preached at a special service held at St. John's, Westminster. He said much unnecessary pain was caused by cold-blooded cruelty to sensitive living creatures, the motive of which was either so-called sport, or amusement, or dress decoration, or gluttony, or scientific inquisitiveness. The members of the congress were doing their utmost to make the world less painful to their patient, useful, humble, beautiful, non-human fellow-creatures. For his own part, he thought there were no greater cruelties perpetrated in the world than those which were done in the name of science in some of the physiological laboratories; he said "some" because he gratefully acknowledged that there were exceptions in some of the English laboratories. He expressed his cordial sympathy with the congress, which put forward a claim for simple justice, and sought to undeceive the public on questions relating to experiments on living animals. Eminent surgeons had declared the practice to be not only useless, but absolutely harmful; many declared that it had led surgeons into errors of the very gravest character. Evidence was accumulating every day that severe suffering was inflicted upon the human race from the erroneous conclusions produced by experiments on animals. In ten years' time it would be more clearly recognized, mainly through their propaganda, that the golden rule of the noble medical profession was prevention of disease—not destruction.

REPORT OF THE DEPARTMENTAL COMMITTEE ON THE WEST AFRICAN MEDICAL STAFF.*

THE report of the Departmental Committee appointed last November to consider the organization and administration of the medical departments of the governments of the Crown Colonies in West Africa was published last week as a Parliamentary paper. It is prefaced by a memorandum in which the Secretary of State expresses his views on the report in the form of a dispatch addressed to the various governors concerned.

The committee consisted of three officials of the Colonial Office (one of them Mr. H. J. Read, C.M.G., acting as chairman), a Principal Medical Officer of the West African Medical Staff, a Medical Inspector of the Local Government Board, and a representative of the medical profession in Great Britain, namely, Dr. Fowler, late Dean of the Faculty of Medicine of the University of London, and Senior Physician Middlesex Hospital.

In addition to a great deal of documentary evidence in the form of official papers, including the memorial submitted last year by the officers of the West African Medical Staff and the reply thereto by the Secretary of State, the committee heard evidence from some twenty-five persons, including representatives of the medical officers, of the governors, of the merchants trading in West Africa, of the schools of tropical medicine, as well as the President of the Medical Board, India Office, the Director-General Army Medical Service, and Professor W. J. Simpson, who visited Africa last year at the request of the Colonial Office, and drew up a memorandum on the sanitary organization required, which appears as an appendix to the report.

The condition of matters which led to the appointment of the committee will be seen in turning to an article published on January 25th, 1908, p. 214, in which the whole question is reviewed, and to a leading article on November 21st, 1908, page 1576.

THE COMMITTEE'S RECOMMENDATIONS.

The committee introduces its report with a statement to the effect that it is drawn up on the hypothesis that it is desirable to encourage medical officers to make the West African Service their permanent career, and records a number of reasons for regarding the opposite course as inimical to the interests of the Protectorates and Colonies.

Advisory Committee.

The committee holds that in order to bring the Colonial Office into closer touch with the medical profession and with medical science an Advisory Committee should be appointed, primarily with a view to the better medical and sanitary administration of West and East Africa, but possibly also to advise as to corresponding questions in other colonies. The committee should be as small as is consistent with ability to deal satisfactorily with every class of problem on which its advice might be sought. A membership of six would be adequate; two should be officials of the Colonial Office (one to act as chairman), three others being experts in tropical medical research, tropical hygiene, and general hygiene respectively, the sixth to be one whose ability and experience would enable him to speak with authority on general medical science and practice in the United Kingdom.

The report does not favour the inclusion on the committee of an officer on the active list of the West African Medical Staff, but the evidence of such an officer should be available when any important question affecting the colony in which he is serving is under consideration. On the other hand, it is regarded as very desirable that an officer with local experience should be on the committee, and the appointment as an additional member of some senior officer on the retired list is recommended, provided one whose occupation would permit him to give the necessary attendance is available.

The committee should have no administrative or executive duties, its function being to advise the Secretary of State as to the decisions he should reach on the medical and sanitary problems submitted to him; as to the selection of candidates for first appointment; as to promotions in the senior ranks, and as to any courses of study which officers may be called on to follow before promotion.

Sanitation.

The medical and sanitary duties of the West African Medical Staff cannot be entirely separated, but in each of the larger towns sanitation should be in charge of an officer who should hold the D P.H., and do no other work. Elsewhere sanitation must be an addition to the medical duties of officers. It is recommended further that a limited number of senior officers should be told off to devote themselves to the study of sanitation in West Africa, and to make tours of inspection throughout their districts and furnish full reports with recommendations. There should be two of these officers—a senior and a junior sanitary officer—for Northern Nigeria, Southern Nigeria, and the Gold Coast respectively, and one for Sierra Leone, who would also be in charge of the Gambia Colony and Protectorate. Their reports should be made to the principal medical officer of his colony, and by him transmitted *in extenso* to the Governor, with any observations he may desire to make. The Governor in his turn should transmit the reports and the principal medical officer's observations to the Secretary of State, accompanied by any remarks thereon that he thinks desirable. By this means the sanitary needs of each colony would be made clear, and it would be possible to preserve continuity of administration in sanitation—perhaps the most important of all West African questions. In the same connexion the Public Works Department of each colony should be

* *Report of the Departmental Committee on the West African Medical Staff.* London: Wyman and Sons: Edinburgh: Oliver and Boyd: Dublin: E. Ponsonby. (Cd. 4720. 2½d.)

strengthened by the inclusion of an officer with special knowledge of sanitary engineering.

Boards of Health.

The committee is definitely opposed to the creation of either central or local boards of health. If they possessed administrative power they would trench on the work of the executive government, while in any advisory capacity they would serve no function which would not be better filled by a consultation between the principal medical officer, his senior sanitary officer, and the head of the Public Works Department.

The Question of a Director-General.

The appointment of a Director-General is not recommended, since by controlling the West African Medical Staff and its work he would, it is considered, exercise functions incompatible with the general system on which the West African colonies are at present governed. The appointment of an inspector-general and deputy inspectors-general, having their head quarters in England, might eventually perhaps prove useful, but would be very expensive. The creation of such posts is thus not at present recommended, more especially because the committee holds that there should be an annual conference between principal medical officers and senior sanitary officers of all the colonies; this would be of great practical utility in accumulating a common stock of knowledge, and so enable proposals for the more effective treatment of sanitary problems to be formulated. With the reports of these conferences and those respecting their tours of inspection furnished by sanitary officers, before it, the Advisory Committee would be able to perform the greater part of the advisory duties which would fall to an inspector-general. In special cases an expert, if need be, could be sent out to report on any large sanitary undertaking in view.

The Status of Officers.

In several places in the report stress is laid on the essential importance of the medical department, and in order to secure greater authority for its head in each colony, it is specifically recommended that the principal medical officer in each colony should be an *ex officio* member of both the Executive and Legislative Councils. Other officers should be given relative rank with officers belonging to other departments on a system by which service salary and position in department are taken into account.

The committee has had evidence that administrative officers of districts in some cases regard the medical department as subordinate to them and its members as liable to be called upon for any duty they please. As the administrative officer in charge of a district in its responsible head, it may in cases of emergency be necessary for him to give direct instruction to officers of all other departments, but in ordinary circumstances the proper course is for him to convey his criticism on a medical officer or his desires to that officer's departmental superior. Moreover, the idea that officers of the West African Medical Staff are appointed solely to look after Government officers should be discouraged. It is a part of the duty of a medical officer to increase the progress of sanitation amongst the natives dwelling in his district, and he should be encouraged to devote himself to medical work amongst natives and to research, and the extent to which he is called upon to devote his "leisure hours" to non-professional duties should be strictly limited. If he necessarily has to act for the administrative officer of the district during the latter's absence from head quarters, he should draw duty pay at the same rate as that individual.

Drugs and Instruments.

The necessity of economy in the preparation of estimates should be pressed upon principal medical officers, but the principle to be kept in view by the West African Medical Administrations should be that of regarding the votes for the medical department as among the last, if not actually the last, to be reduced.

Pay and Allowances.

There are at present 167 officers in the West African Medical Staff, of whom only 21 are in receipt of a salary of £600 or more. An officer may thus remain for years on a salary of £500 with little prospect of promotion; this should be altered. The initial salary of £400 per annum rising by increments of £20 to £500 per annum is adequate, but towards the end of the fifth year of an officer's service a report should be furnished to the Governor by the principal medical officer stating whether he is recommended for promotion, and this report should be transmitted to the Secretary of State with observations. If the officer is recommended for promotion he should be placed at the end of his five years on a higher scale, one rising by increments of £25 a year to £600 per annum, subject to his obtaining a satisfactory certificate respecting a three months' course of study to be undergone when he next comes home on leave. This alteration would ensure deserving officers not being kept indefinitely at a salary of £500 per annum owing to lack of opportunity for promoting them. Officers on this scale should be called First Class Medical Officers.

Promotion to the ranks of Senior Medical Officer and higher ranks should be by selection on the advice of the Advisory Committee. Their pay, namely, £600 to £700, should remain as at present, but the rate of increment should be £25 instead of £20. Senior Medical Officers and higher grades, including Principal Medical Officers, should draw duty pay at the usual rate of 20 per cent. of their initial salary. The Senior Medical Officers in charge of Ashanti, of the Northern Territories, and Eastern and Central Provinces of Southern Nigeria should commence at £700, rising by £25 yearly increments to £800, with duty pay at the rate of £140 a year, and should be called First Class Senior Medical Officers.

The Senior and Junior sanitary officers whose appointment is recommended in each colony should rank with, and draw the same scale of salary as, first-class senior medical officers and senior medical officers respectively.

The salaries of Deputy Principal Medical Officers are inadequate; they should be paid £800 per annum, rising by £25 annual increments to £900 per annum, with duty pay at the rate of £160 per annum.

Private Practice.

In the pamphlet issued for the information of possible candidates for admission to the West African Medical Staff a paragraph should be inserted to the effect that private practice does not exist at the majority of stations, and that when it does, such station is usually allocated to a senior officer. A fee may be asked from a person admitted to hospital by the medical officer attending him, if such person is one who would be expected to pay him if attended at his own residence. If the reasonableness of a fee be disputed the question should be referred to the principal medical officer, and if the patient disputes his decision, to the Governor for final settlement.

Study-Leave.

Periods of study imposed by the regulations should be on full pay, and, subject to certificates of satisfactory attendance being obtained, the fees of the course should be paid on the officer's behalf, and railway expenses and lodging allowances be granted. Two clear months for purposes of recreation should be allowed in addition to the time absorbed by the courses. The expenses of approved but not necessary courses should be paid, any extra leave required being on half-pay. Officers with an aptitude for sanitary work should be encouraged to take the D.P.H.

Research Work.

The establishment of the Lagos Medical Research Institute is a great step forward, but there should also be a local laboratory in each colony. Each should be placed in charge of an officer for a tour of duty, and on his return from his subsequent leave he should be seconded for duty at the Central Lagos Institute, and then return to his own colony, either to be absorbed in the staff or to undertake further research work. The ultimate benefit to each colony from the training undergone by the seconded officers would outweigh the additional expense incurred, and render superfluous the creation of special posts for the purpose of scientific research.

Admission of Candidates.

There should not at present be a competitive examination for admission to the service, but a subcommittee, consisting of two medical members of the Advisory Board and

one of the private secretaries to the Secretary of State, should be appointed to make a selection among applicants. Natives of the West Coast or of India should not be admitted to the service, though their employment as a subordinate medical service on the lines of that in India might be considered by the conference of Principal Medical Officers.

The Secretary of State's Comments.

In the dispatch from the Secretary of State it is mentioned that he has already discussed certain questions arising out of the committee's recommendations with two of the Governors, and he trusts that the others will agree with the conclusions at which he has arrived. The committee's recommendations are approved as a whole, but must be modified in some respects, and on these the opinion of the Governors is requested.

Sanitation.

The appointment of special officers for the performance of sanitary duties in large towns should be carried out, but only by degrees as the necessary funds become available, and as experience shows which are the towns at which they are chiefly required. The informal consultations recommended by the committee between the Principal Medical Officer, his chief sanitary assistant, and the head of the Works Department, are not approved. A board of these officers should be formed, as it would relieve the Governor of much of the labour necessitated by the putting forward of sanitary schemes.

The desirability of cordial co-operation between administrative and medical branches of the service is recognized, but it would be advantageous for a local sanitary committee, to be formed of the district commissioner, a medical officer, and a member of the Public Works Department, when one is stationed in the district. In the event of disagreement, the district commissioner must decide as he thinks best, though it is trusted such occasions will be rare. With the concurrence of the district commissioner, the Senior Sanitary Officer should be empowered to give directions for the carrying out of sanitary improvements provided they do not entail expenditure in excess of the estimates for the district.

With regard to the relations between the officers of the West African Medical Staff and the administrative officers in charge of the districts, the committee has not given sufficient weight to the position of administrative officers in charge of districts, so the Secretary of State is unable to accept the committee's views in their entirety. Such an administrative officer should be entitled to issue instructions direct to the medical officer, but, of course, not on purely professional matters.

Status of Medical Officers.

With reference to the employment of medical officers on non-professional duties, they should be prepared to assist in the carrying out of the administration should necessity arise, at all events, in "bush" stations, where there are but few white officers, and where the medical duties are not as a rule heavy. Such officers should be directed to keep diaries showing how their time is actually occupied. It is only on routine administrative work which cannot await the return of the administrative officer that medical officers should usually be employed.

It has been pointed out to the Secretary of State that a medical officer who acts for the administrative officer while the latter is away on tour in the district does not perform all the duties of the post, and thus is not entitled to duty pay, but an allowance at the rate of 2s. 6d. a day might be granted.

The appointment of Principal Medical Officers as *ex officio* members of legislative and executive councils cannot be decided on without reference to other considerations on which a separate dispatch will be sent to the Governor.

The new scales of pay are approved, but Deputy Principal Medical Officers should no longer be allowed to take private practice. The proposed new titles, first-class medical officer and first-class senior medical officer, are regarded as superfluous. In recommending duty pay for all Principal Medical Officers, the committee has not given sufficient weight to the comparative importance of the medical and other departments in the different colonies. It has been suggested, but not by the committee, that, since a medical officer under the present regulations can retire from the service after nine years with a gratuity of £1.000, the Government should be in a position to call upon him to do so when such course appears desirable. The Secretary of State sees no objection to this proposal.

The recommendation as to drug estimates is not approved, though it might apply to a list drawn up at a conference of principal medical officers and approved by the Advisory Board. It is a question how far any special drug for which a medical officer may have a preference should be supplied at the public expense.

ARMY DIETS AND TINNED MEATS.

The third report (dated January 12th, 1909) of the Committee on Physiological Effects of Food, Training, and Clothing on the Soldier deals with the supply of food. The committee points out:

> That any standard of energy-value which may be fixed on in calculating a dietary is only an average value, and that a considerable margin must be left for each individual, so that both waste and insufficiency may be avoided. . . It is also essential that a dietary should be as varied as possible. Experience shows that an unvaried diet may be not only extremely distasteful, but may have serious consequences as regards general health and liability to disease.

The varying appetite for different kinds of food is an expression of physiological needs of which we cannot at present give a strict account. The constitution of the proteins varies; different proteins yield different amino acids, and we know that adding certain amino acids to gelatine, for example, makes an inadequate protein food more adequate. We probably vary our diet to obtain all the protein building stones we require, some of which may only occur in our foodstuffs in traces. Hence probably most of us continue to eat double the protein amount found adequate by Chittenden. The committee says:

> At present the balance of opinion is against cutting down the allowance of protein to much below the average among healthy and vigorous men of about 125 grams daily.

The question is largely an academic one, as most foods afford a pretty abundant supply of protein when taken in the proportions necessary to give the energy-value required, and to be eaten with relish.

The peace dietary provided to the British army is less than that allowed to the French, but more than that allowed to the German. The British dietary is supplemented by food bought for supper, and the pay is now sufficient to enable this to be done without hardship. Experience seems to show that the plan of letting the men buy their own supper works smoothly, and is preferred; it gives elasticity to the diet, and allows each man to select the quality and amount of food which suits him. The recruit—a growing lad—requires more food, and the Army Council have now wisely granted him a messing allowance of 3d. a day. The recruit buys considerable quantities of cakes, etc. The committee has visited several barracks, and found the quality and variety of food satisfactory. The war rations of the British Army in South Africa may be contrasted with that of Japan and Russia in Manchuria:

	Protein.	Fat.	Carbohydrate.	Calories.
British ...	... 138	... 105	... 528	... 3903
Japanese ...	... 158	... 27	... 840	... 4313
Russian ...	... 187	... 27	... 775	... 4891

For constant marching and fighting the available data show that about 4,500 calories would be needed; but the amount of physical work done in war varies considerably, and the British war ration has been fixed as the result of considerable practical experience. To underfeed an army is to court infection and disease and to reduce the working power to a minimum. It is, in fact, the most serious mistake that can be made. The committee expresses the opinion that further observations of a more definite character than those at present available are needed to settle definitely the adequacy of the British war ration. No doubt less would be required in a hot climate than a cold.

One of the most interesting and important parts of the report of the committee is that on the work carried out for it by Major Beveridge and Captain Fawcus on tinned meats. They found that the lowest temperature which will completely sterilize a tin of meat is

120° C. (248° F.) acting for not less than sixty minutes! It takes this long time for the heat to penetrate to the centre of the tin. The "blowing of tins" is due to the spores of *Bacillus cadaveris sporogenes* of Klein (*Bacillus putrificus coli* of Bienstock), which are extremely resistant to heat. They found that the spores were killed by a temperature of 112° C. in twenty-five minutes, 115° C. in ten minutes, and 117° C. in less than five minutes. The bacillus is present in the colon, and contaminates all meat. It is not pathogenic, but causes putrefaction in anaërobic conditions. A tin containing these spores may remain good for months at 22° C. and under, but becomes "blown" in the tropics, the optimum temperature for the growth of the bacillus being 37° C. It is recommended, therefore, that sample tins should be examined after having been incubated at 37° C. for a fortnight. In some cases the amount of potassium nitrate from the pickling food was found excessive, and "its ingestion would probably cause gastric disorders." The blackening of tins inside—"can burn"—is due to sulphide of tin and iron, and occurs at the time of sterilization, particularly in meat that is alkaline from decomposition of the protein sulphur holding compounds. Perfectly fresh meat, acid in reaction, can be sterilized at 120° to 130° C. without blackening the tin. Alkalinity and a high temperature favours it. The blackening is not harmful to the consumer. The samples examined varied in age from a few months to 5½ years; the last, a sample of roast mutton, was remarkably well preserved, and quite fit for consumption. Major Beveridge reports:

> One cannot help remarking on the very indifferent quality of the meat as a whole. This is chiefly evident in the exceeding coarseness of the fibre, especially in some of the American brands. In this country, at least, no one would ever dream of purchasing meat of this description, and when corned its coarseness is still more marked. The change on active service to not only a preserved ration, but one consisting of a meat quite unlike the meat the British soldier is accustomed to, is somewhat severe, and leads to a natural distaste.

Two brands of meat—one a New Zealand and the other an Argentine brand—were found very superior in all respects to any other brand examined, both as to the quality of the meat, the state of preservation, and the better tinning of the interior of the tin.

> A tinned meat, made in the British Islands, from selected meat or animals, and prepared by the best methods, would meet all the requirements of a nearly perfect ration. It is a pity that the preserved meats for the soldier's use cannot be manufactured under the direct supervision of the Supply Branch of the army itself.

The amount of fat in most of the samples was found to be very high; the average worked out at 17.74 per cent. for corned beef, and 28.12 per cent. for corned mutton. In one sample the fat was 57 per cent., and the meat was in a repulsive oily condition. The committee lay down the rule that the amount of fat in the tin should be 10 to 15 per cent., and that the preparation of tinned meat should continue to receive careful supervision at the hands of the Supply Branch of the army.

The committee is carrying out a most important work to make the lot of the soldier a happy one, and indirectly improve the standard of the nation's food supply.

THE ROYAL COMMISSION ON THE POOR LAW AND THE RELIEF OF DISTRESS.

THE BOARDS OF GUARDIANS AND THE MEDICAL SERVICE.

PROBABLY there never was a more sweeping condemnation of any public service than that passed by both the Majority and the Minority Reports of the Royal Commission on the Poor Law in reference to the medical service under boards of guardians. As all discussion as to a reformed public medical service must begin with the question whether the guardians shall continue or not to have any share in such a service, it may be useful to have in a condensed form the chief arguments that have been given in the reports.

It will be at once noticed that they are very largely arguments against the guardians. In no case do the reports blame the district medical officers themselves. On the contrary, both the Majority and the Minority speak of them in terms of the highest praise, and without hesitation attribute any defects in their work to the conditions under which they are compelled to carry it out. This is especially worthy of note in view of the fact that some guardians have sought to screen themselves by a charge of incompetence or neglect on the part of the district officers. With such charges the Commission has not the slightest sympathy, and the eulogium passed by both the reports on the district officers will remain as a historical vindication of their personal qualifications and devotion to their work.

We are only immediately concerned with the medical service, but as this is so intimately bound up with the system as a whole, it is impossible to avoid including points, mainly general in their application, but, as far as possible, we shall confine ourselves to the relations between the guardians and the non-ablebodied.

The general conclusion of both the Majority and the Minority Reports is that boards of guardians should be abolished altogether, and not replaced by any body directly and publicly elected *ad hoc* for either general or medical relief. The question of *ad hoc* election is, however, taken up specially by two of the Majority commissioners, Miss Octavia Hill and Dr. Downes, both of whom are in favour of an authority specially elected *ad hoc* from an enlarged area, but with the important addition of a large nominated or co-opted element, which would, of course, entirely alter the constitution. Dr. Downes thinks that the present system of election of guardians has not secured efficiency, has not prevented corruption, has not represented all interests, and has not enlisted the services of many well-qualified workers—a most formidable indictment. At the same time he thinks that many of the faults attributed to guardians are really due to shortcomings in public education, sanitation, and housing, and that justice has not been done to guardians for their attempts to introduce classification of inmates. He speaks highly of many infirmaries which are not so deterrent, at any rate in London, as is often represented. A fuller summary of Dr. Downes's position was given in our issue for July 3rd, p. 31.

Dr. McVail says that the present system of Poor Law medical relief would break down entirely if it were not supported by general hospitals and gratuitous medical work; but these cannot be everywhere depended on, so that the Poor Law by itself is incomplete and insufficient. He founds a strong indictment on the fact that preventive treatment is almost entirely neglected by guardians, and medical relief is given without any accompanying requirements as to good conduct, morality, sanitation, domestic or personal cleanliness, or obedience to the doctor's orders. His suggestions for reform of the guardians, if they are retained (though he inclines to the opinion that they ought to be replaced by a new health authority), were summarized in our issue for April 3rd, p. 855.

In the following summary of defects it will be evident that in many cases the fault lies, not with the individual boards, but with the system, for which the boards are not responsible. In other cases it is abundantly clear that, even under their present constitution, the defects could be remedied. Particular faults of isolated boards are not mentioned, but only those that are more general.

The general lack of public interest in the elections of the guardians brings special dangers. In London, while 78 per cent. of the voters poll in a Parliamentary election, and 48 per cent. in borough council elections, only about 28 per cent. vote for the guardians. Something similar occurs in the country. The result is that any small active party can capture a board, and the policies of the boards vary from year to year. The best men are often not elected, but often those who will promise the largest measure of free relief, for, the voting qualification being low, many of the voters are prospective paupers. In rural districts small farmers form the great bulk of the guardians. They are prone to excessive economy at the risk of good administration, and their policy is "parsimony tempered by patronage of their friends." It is not uncommon for them to pay low wages to their own servants and to supplement them by grants of outdoor relief, perhaps giving relief to an aged father whose son is in full work but with a low wage. Even in town districts this has occurred, and we are told that "the work of guardians is tending to fall into the hands of persons who care more for their own interests than for those of the community." There is an almost

complete failure of guardians to avail themselves of the power of co-option which they have. Only 218 out of 643 boards exercise this power at all, and there are only 370 co-opted members out of a possible total of 2,572. There is absolutely no uniformity in the giving of medical relief; persons who would be sent into institutions in one union have free out-door medical relief in another. Many boards refuse relief to sick dependents of an able-bodied man unless he himself goes into the workhouse; other boards make no attempt to exclude even the well-to-do, while others only give medical relief to those who are already receiving ordinary relief. Thus there is often not only no inducement to providence but a distinct inducement to people to range themselves among paupers in order to get medical relief. There is some fear that medical relief is often made a pretext for getting general relief, especially medical extras.

There can be little doubt that the combination of destitution work with medical relief under the same body is the cause of many of the faults. The effect of this union is to attach a stigma of pauperism to medical relief and to make it so deterrent that application for medical aid is often postponed unduly; thus cases that could be well treated in an early stage are not seen until the disease is far advanced and untold suffering and consequent poverty exists which might have been prevented by earlier treatment. This deterrence is increased by many boards that try to cut down outdoor relief by "offering the house" or by only giving "relief on loan," or compelling patients to appear before the guardians personally.

There are 3,713 district medical officers in England and Wales, nearly all underpaid. To make it worse, except in a few of the larger towns, they have to provide medicines out of their meagre salaries, and their status is such as to encourage a want of confidence in them, and has been the cause of the opprobrium that often attaches to the name of parish doctor. The custom still prevails in some places, though in "a veiled form," of appointing the doctor who makes the lowest tender. In some places the relieving officers give orders for medical relief freely and without inquiry, even leaving them with shop-keepers for distribution to any applicants. In many country districts the relieving officer is so inaccessible that it is almost the invariable custom for the doctors to go wherever summoned without an order. If the doctor refuses to go and something goes wrong he is blamed for inhumanity, while if he goes without an order he often never gets paid. "In too many unions, it is clear," says the Minority Report, "that outdoor medical relief begins and ends with a bottle of medicine." There is seldom any attempt, and if there were it would be useless, at preventive treatment, and no means of compelling patients to obey directions about sanitation, diet, and general habits. There is no inspection of the patients, and absolutely no inspection of the outdoor medical relief either by central or local authorities. Hardly any boards provide outdoor nurses, and where there are no voluntary nursing associations much of the work of the doctors is nullified by bad home attendance. There is no uniformity about disfranchisement; in some places it follows the receipt of medical extras, while in others it does not follow even complete board and lodging.

In many large towns the guardians have provided good infirmaries quite separate from the workhouses, but the cost per bed in recent years has increased to an alarming extent, not always with corresponding efficiency, but often from extravagant expenditure on palatial buildings. Side by side with this extravagance there is generally the greatest parsimony when the medical staffs are concerned. The salaries of the doctors are often quite inadequate, and many of the best infirmaries are understaffed. Only in some of the best is there any attempt at classification of patients, phthisis and venereal cases being mixed indiscriminately with the rest. In many places there is far too great a tendency for well-to-do people to be attracted to the infirmaries, and very often the cost of treatment is never recovered. In the rural districts there is a serious lack of institutions for the sick poor. Two-thirds of the sick poor who receive institutional treatment are still in mixed workhouses, no separate infirmaries being provided by the majority of boards of guardians. The sick wards in the rural workhouses are often totally unfitted for the purpose, the medical and nursing staffs are insufficient, so much so that often "curative treatment is almost impossible." There is no attempt at classification of diseases, much less of patients according to character. It is quite impossible for small unions to provide separate wards, much less separate institutions, for different diseases, though the need for some classification is so urgent. Only in two ways can this need be met—either by combinations of several unions, or by enlargement of the areas. Power of combination already exists for the provision of special institutions but only few boards have availed themselves of it. There is too great facility for patients entering and leaving institutions; the worst characters flock into them to recuperate from the effects of evil living, and as soon as they have, at the cost of the ratepayers, recovered, they go out to resume their degenerate careers; especially does this apply to unmarried mothers. The Minority Report brings most serious charges against some workhouses for their management of lying-in cases and infants, and the infant mortality in workhouses certainly needs further investigation in order that its true causes may be discovered and remedied.

The above is only the merest sketch of the defects, but it is sufficient to prove that there is a most urgent necessity for complete and radical reform of the whole system of medical relief. The cost of the present system is enormous, and the results are by no means commensurate, and there is the gravest doubt whether any reform will be effective that does not entirely replace the guardians by a new authority with specialized departments.

LITERARY NOTES.

THE Oxford University Press will issue, for the Tudor and Stuart Library, an edition of Sir Thomas Browne's *Religio Medici*, together with the *Observations* by Sir Kenelm Digby, which followed the surreptitious publication of Browne's work in 1642.

The place of the Students' Number, which the *Progrès médical* has published annually for thirty-seven years, will be taken by the *Index du Progrès médical*, which will appear in October as a volume of 800 pages. In addition to the information as to medical study and graduation in the various schools of France, the *Index* will contain an official list of all doctors of medicine and surgery qualified under the French Laws of the 21st Germinal an XI and November 30th, 1892; a list of medical schools and faculties throughout the world, with their professors and teaching staffs; a list of nursing homes, and one of watering places and health resorts, French and foreign.

Inasmuch as the United States Food and Drugs Act of June 30th, 1906, established the *Pharmacopoeia* as a legal standard in all the possessions of the Republic, it has been deemed expedient to translate it into Spanish for the benefit of the inhabitants of the territory comprised within Puerto Rico and the Philippine Islands. The translation has been made by Professor José Guillermo Diaz, of the University of Havana, who was assisted by Dr. Placido Biosca.

In the JOURNAL of June 26th we quoted part of a letter from Sir Samuel Wilks on the proverbial unluckiness of May marriages. The distinguished physician has returned to the subject. He states that Dr. Payne has informed him that Plutarch wrote a book styled the *Moralia*, in which is a chapter called "Quaestiones Romanae," or "Roman Questions." In it is a passage which is translated by Philemon Holland as follows:

> Why did not the Romans marry in the month of May? Is it for that it cometh between April and June? Whereof the one is consecrated unto Venus and the other to Juno, who are both of them goddesses which have the care and charge of wedding and marriages, and therefore think it good either to go somewhat before, or else to stay a while after. Or it may be that in this month they celebrate the greatest expiatory sacrifice of all others in the year? For even at this day they fling off from the bridge into the river the images and portraitures of men, whereas in old time they threw down men themselves alive. And this is the reason for the custom nowadays that the priestess of Juno name Flaminia should be always sad and heavy, as it were a mourner, and never wash nor dress nor trim herself. Or what and if we say, it is because many of the Latin nations offered oblations unto the dead in this month; and peradventure they do so, because in this very month they

worship Mercury; and in truth it beareth the name of Maia, Mercury's mother. But may it not be rather, for that as some do say, this month taketh that name from Majores, that is to say, ancients; like as June is termed so from Juniores, that is to say, younkers. Now this is certain, that youth is much meeter for to contract marriage than old age: like as Euripides said very well:—

> As for old Age, it Venus bids farewell.
> And with old folk Venus is not pleased well.

The Romans therefore married not in May, but stayed for June which followeth immediately after May.

Messrs. Rebman, Limited, have just ready a new book on *Accidental Injuries to Workmen, with Reference to Workmen's Compensation Act, 1906*, by H. Norman Barnett, F.R.C.S., with an article on Injuries to the Organs of Special Sense by Cecil E. Shaw, M.A., M.Ch., M.D., and a legal introduction by Thomas J. Campbell, M.A., LL.D. In view of the very grave responsibility which the Act places upon medical men, and the importance of a report being correct as to diagnosis and accurate as to prognosis, a chapter has been devoted to the making of reports for those who are not very familiar with this very important work. Messrs. Rebman have also just issued Professor de Giovanni's *Clinical Commentaries Deduced from the Morphology of the Human Body*, translated from the Italian by Dr. John J. Eyre, lately of Rome, now of Naples, and the sixth edition of Mr. Bland-Sutton and Dr. Giles's well-known little book on the *Diseases of Women*, a handbook for students and practitioners. The same publishers have almost ready an English translation of Professor Eugenio Tanzi's *Textbook of Mental Diseases*, prepared by Dr. William Ford Robertson, pathologist to the Scottish asylums, and Dr. T. C. Mackenzie, of the Inverness District Asylum.

Medical News.

THE Chelsea Hospital for Women has received from Lady Tate £1,000 to endow a bed.

DR. ISAAC MOSSOP has been appointed by the Lord Chancellor to the Commission of the Peace for the city of Bradford.

THE British Medical Temperance Association will hold a reception at the London Temperance Hospital next Tuesday at 4.30 p.m.

THE Fourth triennial International Congress of the World League for the Protection of Animals and Against Vivisection will be held in the Caxton Hall from July 19th to 23rd.

SURGEON-LIEUTENANT-COLONEL R. H. COOMBS, 3rd Battalion Bedfordshire Regiment, has been appointed Deputy Lieutenant for the county of Bedford by the Lord Lieutenant.

FOUNDER'S day at Epsom College will be celebrated on Friday next, when the prizes will be distributed by the Right Hon. Sir Walter Foster, M.P., and the Thornton memorial window will be unveiled by Canon Curtis.

DEMONSTRATIONS in clinical medicine have been arranged to be given at the London Hospital Medical College during August and September, commencing on Monday, August 9th, at 2 p.m. Further particulars will be found in the advertisement pages.

DR. STIRLING, Dean of the Medical Faculty and Pro-Vice-Chancellor of the University of Manchester, has been appointed to represent the university on the occasion of the quincentenary of the University of Leipzig. The ceremonies in connexion with this event take place from July 28th to 31st.

UNDER the auspices of the Society for the Study of Inebriety, the third Norman Kerr Memorial Lecture will be delivered in connexion with the Twelfth International Congress on Alcoholism in the theatre of the Victoria and Albert Museum, South Kensington, on Tuesday next at 8 p.m. by Professor Taav. Laitinen, M.D., Professor of Hygiene and Director of the Hygienic Institute in the University of Helsingfors, Finland, and Chairman of the Finnish National League of Health, who will take for his subject, "The Influence of Alcohol on Immunity."

THE accounts of the Nightingale Fund for last year show a credit balance of £685. At the St. Thomas's School there were 138 probationer nurses on the books, of whom 49, having completed their probationary year, received appointment as extra nurses on the staff of St. Thomas's Hospital, and 33 were discharged as unsuitable, or left from other causes. Deeming that the connected school at Marylebone Infirmary is now capable of working as an independent institution, the committee has arranged to cease to subsidize it.

AT a meeting of the council of the Charity Organization Society, on June 28th, it was decided to appoint a small committee to consider in what way the application of the principle of provident, as opposed to purely charitable, district nursing can be extended. The question was introduced in a paper by Miss Amy Hughes, General Superintendent of the Queen Victoria Jubilee Institute for Nurses, who showed that originally all modern associations for the nursing of the sick in their own homes were worked upon a purely charitable basis, but that little by little it has become recognized that even in nursing anything which tends towards pauperization is a mistake.

THE International Council of Nurses is to hold a congress at Caxton Hall from July 19th to July 23rd. The Council already represents a membership of some 20,000 nurses, and this number will, it is expected, be increased after this meeting, as four new countries have expressed their intention of formally joining it. Delegates are expected from Canada, the United States, Germany, Holland, Denmark, and Finland, and twelve other countries, not yet officially represented on the Council, will send "fraternal" delegates. Among those expected are M. G. Mésureur, Director of the Assistance Publique at Paris, two ladies dispatched by Prince Matsukata, President of the Japanese Society of the Red Cross, three nurses sent by the Cuban government, Dr. Ley, representing Belgium, and Princess Doria, representing Italy. The honorary president of the Council is Mrs. Bedford Fenwick, the president, Miss S. B. McGahey, of New South Wales, the honorary treasurer, Miss M. Breay, of the Registered Nurses' Society, and the honorary secretary, Miss L. L. Dock, of New York.

THE annual general meeting of the Asylum Workers' Association, founded in 1895 to improve the status of asylum nurses and attendants, to provide for them "homes of rest and nursing," and to enlist public sympathy in their work, was held on July 13th at the Medical Society's House, Sir William J. Collins, M.D., M.P., in the chair. The annual report set forth that the finances were sound, and there was an improved credit balance; 18 cases had received beneficial aid from the Homes of Rest Fund. *Asylum News* continued to prosper under its new editor, Dr. James Nicoll, of Caterham Asylum, and was becoming more and more a medium of intercommunication between asylum workers scattered throughout the Empire. Amongst parliamentary matters engaging the attention of the committee had been the various Nurses' Registration Bills, and steps had been taken to safeguard the equitable treatment of mental nurses. The most important matter had, however, been the preparation of a bill to secure for workers in public asylums definite and assured pensions. This had been introduced by Sir William Collins, and was now in the hands of a Select Committee of the House of Commons. Sir William Collins, in moving the adoption of the report, remarked that at the present time the association was stronger in point of numbers than it had ever been since the increase in subscription in 1902. He pointed out the arduous nature of the work done by nurses and attendants in lunatic asylums, and maintained that after years of faithful service they were entitled to pensions, not as a favour but as a right. To secure that right was the object of the bill which had been entrusted to him; its passage into law this year was not, he thought, by any means hopeless. Mr. Charles Roberts, M.P., in seconding the motion, testified as one of the Board of Commissioners in Lunacy that his colleagues sympathized with the officers and servants of asylums, and were in favour of the Asylum Workers' Superannuation Bill. The report having been adopted, two gold and two silver medals were presented by the President on behalf of the association for long and meritorious asylum service, that of Attendant Cox, of Wyke House, extending over forty years, and that of Nurse Jackson, of Bethlem, over thirty-eight years. Subsequently officers and executive committee were elected (with thanks for services in the past) on the motion of Drs. Outterson Wood and Bower, and other business was transacted; the meeting concluded with cordial votes of thanks to the President and to the various speakers. Dr. G. E. Shuttleworth, Parkholme, East Sheen, S.W., is the Honorary Secretary of the association.

British Medical Journal.

SATURDAY, JULY 17TH, 1909.

THE SO-CALLED MOTOR AREA OF THE BRAIN.

THE precise function of the so-called "motor area" of the cortex of the brain has, for the last forty years, been a field for exercitation to physiologists and linicians alike. Indeed, even before that, it had been ecognized that localized or restricted parts of the cortex subserved definite movements of certain portions of the body; and the further question, Is the "motor cortex" purely motor in function? has from the first given rise to much controversy. It may now, as will be shown later, be safely answered in the negative. The latest contribution to the discussion is the Linacre Lecture by Sir Victor Horsley, published with a special plate of illustrations in this issue (page 121). No living man of science has done more to determine what are the particular functions of the cerebral cortex than has Sir Victor Horsley in the last five and twenty years, and his Linacre Lecture shows the combination of physiological knowledge and clinical acumen that has so often before served to impress its characteristic qualities upon his work. The term "motor area" is, as has often been remarked, a more than unfortunate one. It is convenient, and so continues to obtain current usage; it is also wholly inaccurate, for there can be no doubt that the "motor" area of the brain has many more functions to perform than the mere representation or initiation of movement. Dr. Charlton Bastian proposed the much more expressive term, the "kinaesthetic area," to take its place many years ago, and Dr. Hughlings Jackson the equally good name "sensori-motor area." We can do no more than deplore the fact that neither of these far more correct and comprehensive terms should yet have succeeded in ousting the well-known but misleading "motor area" from the vocabulary of science.

Attacked from both the physiological experimental and the clinical sides, the literature of the subject of cerebral localization has become very extensive in recent years. Accordingly, the Linacre lecturer found it necessary to confine himself to the consideration of the extent and functions of that part of the cortex, which is responsible for the movements of the arm and no more. Experimental physiology has repeatedly shown that, in the macaque monkey for example, the post-central gyrus of the cortex—that is to say, the convolution immediately behind the fissure of Rolando—is more often than not one of the centres for the movement of the opposite hand and arm; while, as the evolutionary scale is ascended, this gyrus appears to become less and less excitable, being very little so in the chimpanzee or gorilla. In man, electric stimulation of this post-central gyrus about the inferior genu of the fissure of Rolando produces no movements, so long as the current is kept small in quantity, and does not spread unduly to adjoining parts of the cortex and stimulate them. It has long been regarded as certain that, in man, the more essentially motor part of the kinaesthetic representation of the upper limb lies in the pre-central gyrus, or convolution lying next in front of the Rolandic fissure. Now it is interesting to note that the elaborate histological studies of the post-central convolution made by Campbell (1905) led him to conclude that it must be a sensory centre, although physiologists have never yet succeeded in proving the separate existence of special centres for sensation in any part of the cortex of the brain. Hence no little uncertainty as to the exact share in the cortical sensori-motor representation of the arm taken by the post-central gyrus has existed up to the present time, and the later work, like that of Campbell—which is well supported by the investigations of Brodmann—has perhaps only served to increase this uncertainty.

Quite recently, however, help has come from the clinical side. Sir Victor Horsley has met with and operated upon a case in which there was a nervous lesion confined to the pre-central gyrus of the right side, and his careful observations, made both before and after excision of this area, prove that it has the sensori-motor character claimed above for the whole so-called "motor area." The patient, an otherwise healthy lad of 14, had for seven years suffered from paroxysms of athetoid and convulsive movements of the left upper limb, worse when attention was directed to them; when the limb was quiet the voluntary movements were normal, as also were the reflexes and all forms of sensation. Removal of the peccant portion of the cortex of the brain was advised, and the operation was performed in March, 1908. The cortex of the right Rolandic region was exposed, and was first stimulated electrically in order to determine the area to be removed. Using a moderate strength of current, no motor response was obtained by stimulating the post-central gyrus. The exposed pre-central gyrus was then stimulated at eleven different spots successively, and the resulting movements of the left arm and shoulder were noted. It was seen that no other part of the cerebral cortex in the neighbourhood gave any response in the upper limb. Accordingly, the gyrus thus marked out by movements in the arm and shoulder was excised *in toto*, great care being taken to avoid laceration of the adjoining parts. The patient made a good recovery, and the spasmodic movements of the left hand and arm disappeared from the moment of the removal of the gyrus.

It is, however, on the subsequent examination of the case that Sir Victor Horsley relies to prove the sensori-motor function of the pre-central convolution. Twelve days after the operation the limb was motionless and flaccid, and the left side, particularly the leg, was numb with the subjective numbness typical of lesions of the parietal cortex. Knowledge of the position of the left arm returned gradually, but even so much as nine months after the operation knowledge of its position was lost if it were kept at rest for some time; some seven months later this condition, too, had passed off. Knowledge of the position of his fingers returned gradually to the patient, but less completely; and his identification of points lightly touched was characteristically imperfect at first, but continues to improve slowly. Tactile sensibility has gradually returned to the whole limb, with the exception of the ring and little fingers; temperature sensibility was much less disturbed by the operation. The pain felt when the skin of the left upper limb was pricked by a needle, and the success

with which such a prick could be localized, were both diminished at first, just as was the reaction to a light touch described above. But the most profound change produced by the removal of the right precentral gyrus was the inability to recognize the form of objects by touch, or astereognosis, and this disability remained well marked even thirteen months after the operation. As regards voluntary movement, a slow and slight consensual flexion and supination of the left arm when the right hand was strongly clenched were noted a fortnight after the operation; at the end of the third week the power to abduct and adduct the shoulder returned; sixteen months after the operation slow flexion and extension of the thumb were possible, the fingers, as regards extension, following in rapidly diminishing degree, while movements at the elbow were fairly good. In two-handed work, however, a certain sense of dissociation between the two hands made the patient prefer to use one hand at a time only. There are many other points of the greatest interest raised in the Linacre Lecture which want of space forbids to be here discussed; such, for example, as the question of the function and importance of the largest pyramidal cells in the Rolandic area of the cortex, the so-called Betz cells, that were at one time considered to be the only "motor" element in the cortex; such, too, as the intricate subject of topognosis and its relation to the axis of the body, or the question of hypertonia in paretic muscles. But it is at any rate certain that the case detailed above proves that so far from being a purely "motor area," the pre-central gyrus in man contains the cortical representation of such multiple and varied functions as tactile sense, topognosis, muscular and arthric sense, stereognosis, pain, and, lastly, movement: yet purposive or voluntary movements can still be performed after complete removal of the corresponding part of the pre-central gyrus. Arguments are also advanced by the lecturer for believing that the post-central convolution is probably similarly sensori-motor in function, but with greater provision for sensory than for motor co-ordination. By analogy, therefore, the "motor area" of the human cortex is indubitably "sensori-motor" in the widest meaning of the term. And in the Linacre Lecture we have once more brilliant example of the way in which clinical surgery, going hand in hand with experimental physiology, may yield to pure science contributions of the highest value.

THE POOR LAW MEDICAL SERVICE AND THE COMMISSION'S REPORTS.

THE long report of the proceedings of the annual meeting of the Poor Law Medical Officers' Association, published in the SUPPLEMENT this week, contains much matter which deserves the careful consideration, not only of Poor Law medical officers, but of the profession at large. The meeting had the advantage of hearing an expression of the views of two members of the Royal Commission—Mr. C. S. Loch, Secretary of the Charity Organization Society, who signed the Majority Report, and Mrs. Sidney Webb, who signed the Minority Report, and who is generally believed to have had a preponderating share in its preparation. Without seeming to detract from the interest of the other papers we may yet be pardoned for expressing the opinion that Mrs. Sidney Webb's was the most important, inasmuch as it took the form of an ardent appeal to Poor Law medical officers to support the recommendations of the Minority. It is, perhaps, rather a pity that the fairy palace built up for district medical officers by Mrs. Sidney Webb should rest on such unstable foundations, though perhaps after all it was not so attractive as she imagined it ought to be.

We can confirm with the added force of practical experience all that she related in her opening remarks as to the wretched conditions under which many district medical officers have to work at present. Compelled in many cases to provide medicines out of a salary that would be paltry even if there were no such deductions, at the beck and call of any person who likes to summon them at any time, knowing well, to quote the words of Dr. Smith Whitaker's evidence, that "if they do not go and anything goes "wrong, then they are accused of cruelty and in-"humanity; if they do go, the rule is that they do not "get paid;" knowing, too, that their patients either cannot, or often will not, carry out their advice as to sanitation, diet and general habits; with no stimulus of inspection, no prospect of advancement, no power in fact to do anything except to give a bottle of medicine, which they dare not refuse even though they know it may be useless — the position of district medical officers is a disgrace to the boards of guardians who have made these conditions. It is not to the interest of the public that this should continue, and in exact proportion as the British Medical Association seeks—as it has made up its mind that it will seek—to ameliorate these conditions, in the same proportion will it be working for the good of the community. Mrs. Webb cannot claim any monopoly in denunciation of this state of affairs. The Majority Commissioners recognize it and deplore it quite as plainly as the Minority, though perhaps not using such words of fervid eloquence.

But when Mrs. Webb comes to describe the remedies proposed, she does less than justice to the proposals of the Majority Report. She says: "The Majority Report "proposes that the Poor Law Medical Service shall "continue in England and Wales separate from the "public health service, under a separate local "authority, and that it shall remain rigidly restricted "to attendance on paupers." But this bald statement needs considerable modification. In the first place the public medical service proposed would not be so completely separate from the public health service as is represented. Most careful arrangements are proposed by the Majority for the co-ordination of the two services. Not only are they to be under the control of the same county or county borough council as the supreme local authority, but the local health committees are to have proper representation on the Medical Assistance committees to ensure full co-ordination. Again, it would be more correct to say that the free part of the service is to be restricted to paupers, for the Majority are quite as much impressed as the Minority with the necessity for making provision for that large class just above the stage of pauperism that cannot pay ordinary medical fees. But does Mrs. Webb mention the restriction to paupers as a reproach to the Majority scheme? Is it not the same in the Minority scheme? Or is it correct, as so many people suspect, that the Minority scheme intends to pave the way to a free medical service for all comers? On the one hand, we read repeatedly in the Minority Report of arrangements for legal assessments to be made by the Registrar of Public Assistance, and

we are told that the unified service proposed "does not necessarily involve" gratuitous treatment for all applicants. On the other hand, the report carefully refrains from discussing the question as to which public services shall be charged for, and the medical service is handed over to the sanitary committees, whose custom it is to do all their work gratuitously; Mrs. Webb's reproach against the Majority, that it would rigidly restrict medical service to attendance on paupers, seems to throw fresh light on the ultimate aims of the Minority. In face of all this, there is strong reason for agreeing with the Majority when they say that the Minority scheme "is inconsistent with any but a "gratuitous system." But surely these doubts ought to be cleared up, and we have a right to demand a plain answer to the plain question, Is the Minority scheme framed so as to encourage free medical treatment for all applicants? If not, and if the Minority would restrict free treatment to those who cannot pay, why should Mrs. Webb reproach the Majority with doing the same? On the other hand, if the Minority does aim at free treatment for all, why not say so plainly? The only reason for leaving it doubtful must be that to declare for a free medical service would wreck the scheme at once. Again, Mrs. Webb only states half the truth when she says that "as many people as possible are to be "enrolled" in the provident dispensaries proposed by the Majority. It would have been fairer to have added "under a fixed wage limit." This alters the whole aspect of the proposal for provident dispensaries; it is an absolutely essential part of the scheme, since it would prevent the total destruction of the practice of general practitioners which would result from a free medical service for all.

But Mrs. Webb, in this appeal to Poor Law medical officers, founds her chief accusation against the Majority scheme, as far as the district medical officers are concerned, on the fact that the Majority Commissioners contemplate that it may be possible in time to do without the district medical officers. It should, however, be noted that this is only contemplated as a remote possibility; for the present the express provision of the Majority Report (p. 301) will hold good—that "where any applicant for medical "assistance is not a member of a provident society, "he shall apply to and at once be treated by "a district medical officer." Further, it is only suggested that the authorities should pay the subscriptions to a dispensary for certain deserving cases, only the aged and widows with young children being actually named. It is nowhere suggested that all paupers should be enrolled at the cost of the authority in the dispensaries; neither is it suggested that all paupers should have a choice of doctor, but only those who are actually enrolled as members of the dispensary. Again, the scheme is so elastic that it is by no means certain that the district medical officers would ever lose their present positions, and if they did full compensation would of course be paid.

On the other hand, it is somewhat remarkable that Mrs. Webb should make so light of the fact that if the Minority scheme were adopted it is far more probable that there would soon be an end of the district medical officers as they exist at present. She herself says, referring to what would happen under the Minority scheme: "We may contem-"plate the district medical officer of the future as "invariably a whole-timer, absolutely debarred from "private practice, properly salaried and pensionable, "and provided with a county motor car to enable him "to cover a large district," etc. Will there be so much more work to do that all the present district officers who are only part-timers can be appointed whole-timers? If so, it will be a sorry look-out for the ratepayers. Again, she says, "This (domiciliary and dispensary practice) would "doubtless remain in the hands of the present district "medical officers until the occurrence of vacancies "permitted a rearrangement of districts; there "would be no disturbance of the rights or positions "of existing officers." Is it seriously meant that the rearrangements of districts would have to wait till existing district officers either got another appointment or died off? It is most unlikely that anything of the sort would occur, for if it did the whole scheme would be at a standstill. If any part-time district officers were superfluous they would simply be compensated, exactly as they would be under the Majority scheme. The only alternative would be to give up their private practice, which many would refuse to do. And as to the bright picture of the "county motor car," it will, we suspect, be received with a smile of incredulity by those who know anything of the ways of local authorities, not excluding county councils.

The same may be said of other parts of the picture. It is suggested that the institutional service would be "recruited largely from the district medical officers of "all the counties, debarred from private practice, with "adequate salaries and pensions." There is not the slightest guarantee that the district medical officers would have any better chance of such posts than other practitioners, who might have better qualifications; neither would many of them be willing to accept an indoor post after years of private practice.

"Finally," we are told, "there would be at the head "of all . . . the county medical officer," who in the future, under the Minority scheme, is to be either a promoted district medical officer, or institution superintendent, or a public health officer—either a clinician or a sanitarian. That means a complete revolution, not only in the Poor Law, but in the sanitary service, which we imagine present medical officers, and especially assistant medical officers of health who are looking for promotion, will not regard with complete approval.

Briefly, after carefully examining Mrs. Webb's picture, so alluring at first sight, we are convinced that the little that would be acceptable to district medical officers is so uncertain as to be hardly worth considering, while much that would be certain would be altogether unacceptable.

We cannot pass over without some protest the remarks of Mr. Sidney Webb after the annual dinner. He is reported to have said: "Outside the medical "profession was the public, who were far more impor-"tant than the former. He would tell the British "Medical Association that it would be useless to "come to any decision resting solely on professional "grounds. If it did, it would be swept aside, and "legislation would certainly be enacted without the "Association receiving the degree of consideration to "which it might hold itself to be entitled." Threats of this kind, thrown without provocation at the British Medical Association, do not augur well for the future if the opinions of the Association do not entirely agree with Mr. Webb's preconceived ideas of what the Association ought to think. The Association does hold that it is entitled to a high degree of considera-

tion in any arrangements in which its members are so vitally affected. No scheme can possibly succeed if one of the predominant partners is not content with the working. The Association has never come to any decision resting solely on professional grounds, to the detriment of the public. Rather has the profession allowed itself far too often to be exploited by the public. A suggestive contrast may be seen if we put Mr. Webb's remarks side by side with the express recommendation of the Majority Report that the British Medical Association should be invited to suggest working details of a scheme with a wage limit, and that representatives of the local Branches of the British Medical Association should have a seat on the Medical Assistance Committees.

This contrast between the attitudes of the exponents of the two schemes is significant. The Majority invites co-operation; the exponents of the Minority show a pretty picture held by an iron hand in a velvet glove. Mr. Webb's remarks came immediately after Dr. Macdonald's invitation to the Poor Law Medical Officers' Association to confer with the British Medical Association before coming to any decision. Any attempt to detach the Poor Law Medical Officers' Association, or to get it to express an opinion before it has fully considered the schemes with the British Medical Association, ought to be resisted, as it must be evident that on this matter, more than on any other that has ever touched the profession, union is strength. Many district medical officers are members of both Associations, and, as Dr. Macdonald intimated, their suggestions will be gladly received and their interests consulted by the special Poor Law Committee of the British Medical Association now considering the subject. We can only express a confident hope they will not be fascinated by Mrs. Webb's tempting prospect, which is, we fear, a mirage, nor allow themselves to be isolated by any premature decisions.

ANTIVIVISECTION AND THE PROTECTION OF ANIMALS.

Two things are mainly remarkable in the International Antivivisection and Animal Protection Congress held last week. One is that it owed a considerable part of what success it had as a demonstration to the skilful mixing up of two distinct elements. This caused confusion of the real issue, which was vivisection. It was admitted by the President, Sir George Kekewich, that some were interested in the question of cruelty apart altogether from vivisection. What proportion of those who attended the congress belonged to this category we are unable to state. What we can say with confidence is that, in regard to this point, the whole medical profession will join in condemning cruelty to animals, whether in slaughterhouses, in the transport of animals, in the working of horses in mines, or in sport. At the annual meeting of the National Antivivisection Society held on June 4th, Miss Lind-af-Hageby stated that the organizers of the congress were endeavouring to make the programme as comprehensive as possible. This comprehensiveness, we imagine, is an outcome of the Royal Commission on Vivisection, where their apparent indifference to the incalculable amount of unnecessary cruelty inflicted on animals outside laboratories was inconveniently pressed on the attention of several witnesses on the antivivisection side. We wish them all success in their efforts to put down cruelty to animals wherever it may be found. We venture to suggest that they might begin with their own President, Sir George Kekewich, whose favourite recreation is said by himself to be salmon fishing. This apostle of humanity declared that whatever divergence of opinion there might be among them in regard to particular points, they were all agreed in this—that pain and torture must no longer be inflicted on helpless creatures, and that if life must be taken it must be taken by the most humane methods. Will he contend that the most humane method of killing a salmon is by dragging it about in the water—it may be for several hours—with a hook fixed in one of the most sensitive parts of its body? Before Sir George Kekewich can consistently abuse vivisectors, he must put his fish under anaesthesia before he hooks it.

The other thing is one which evidently the promoters of the congress felt as marring its effect—that is, the unedifying discord among the antivivisectionists which it revealed. The fact that these worthy people hate each other with more than the rancour of rival religious sects is, of course, familiar to all who have followed their doings. But, if we read the signs aright, the Animal Congress was to have been an occasion for the display of peace and good will. The wolf was to have lain down with the lamb, without the need of an anaesthetic apparatus between them. The disunion which exists in the antivivisectionist ranks was deplored at the meeting of the National Antivivisection Society, to which reference has been made, both by Mr. Stephen Coleridge and Miss Lind-af-Hageby. Mr. Coleridge declared himself to be most anxious to meet anybody amenable to reason on the most generous terms as regards unity. He would like to say to all antivivisectionists, "Come under the old umbrella." The umbrella, we may hint in passing, is not only old but tattered; it is, in fact, so disreputable a "gamp" that it is no wonder many decline Mr. Coleridge's generous offer to them to take shelter under its bare ribs. Miss Lind-af-Hageby echoed the note of unity sounded by Mr. Coleridge. There had, she said, been misunderstandings in the past among fellow workers, but if they could bring about greater union among antivivisectionists in this country, they would have done something worthy of achievement.

But so far off is this union that scarcely have what Sir Thomas Browne calls the "drums and tramplings" of one congress died away than London will resound to the clamour of another. In the *Clarion* of July 2nd Miss A. L. Woodward calls attention to a misunderstanding with reference to the International Antivivisection and Animal Protection Congress. That congress, she complains, was got up many months after and in opposition to her World League Congress, and has caused some confusion. "You "cannot," she adds, "really consider it an animal "protection congress when it condones the cruelties "of the rich, when it happens to have their titled "names, and passes over such cruelties in them as "blood sports." Miss Woodward says that her congress is supported by all the large abolition of vivisection societies. Miss Lind-af-Hageby is hurt by this "unfortunate split," and has deplored the fact that she and her party have been denounced by the opposite faction as shams and humbugs. "She could not," she said, "understand the spirit of any worker in the "great cause of mercy who could not to his enthu-"siasm for animals add a little charity towards his

"human fellow workers." Among Miss Lind-af-Hageby's many gifts, evidently a sense of humour is not included. It is difficult otherwise to understand how so clever a person could have laid herself open to the obvious retort, *Mutato nomine de te fabula narratur*. Perhaps, however, the habit of narrating fables tends to blind one to their possible application in a sense contrary to that intended.

Another sign of the union which prevails among antivivisectionists is the severance by Dr. A. Wall of his connexion with the Battersea Antivivisection Hospital, because "he declined to be a party to mere "factious spite exercised against a large body of "British antivivisectionists whose support has been "given ungrudgingly to the hospital." The secretary of the hospital explains that if Dr. Wall desired to conduct a party of delegates to view the hospital he might do so on a day's notice. Whether this gracious concession was accepted or not we do not know; we only refer to the episode on account of the light it throws on the spirit of antivivisectionism.

Of the proceedings of the congress little need be said. Sir George Kekewich—possibly with the hook of conscience reminding him of his salmon fishing—was particularly virulent. That luminary of the legislature, Sir Robert Perks, said he did not know of a single great discovery in medical science which could be directly traced to the practice of vivisection. What Sir Robert Perks does not know of medical science would make a large library. It would be ridiculous to discuss the question with such an antagonist; we will content ourselves with saying that in the opinion which he expressed he has the misfortune to differ from all the men who have made discoveries during the last half century, from Lord Lister downwards. Of the medical antivivisectionists—Dr. Herbert Snow, Dr. Stenson Hooker, Dr. Josiah Oldfield, and others—it need only be said, in the words of Beaconsfield, that their invective lacks finish. And their speeches contained nothing but invective. Mr. Stead wishes to have cinematograph representations of laboratory experiments with phonographic renderings of the cries of the victims. Surely a man with so much "metaphysical aid" at his disposal has no need to use such carnal means of information. If his "familiar spirit," Julia, cannot, or will not, tell him all that goes on in laboratories, can he not ring up his own spiritual bureau? The congress was appropriately brought to a close by a sermon from Archdeacon Wilberforce, who (if we may judge from the *Times* report) compressed as much misrepresentation into his discourse as the time allowed. That pious but inaccurate divine's power of misstatement is well known. We dealt faithfully with him in the JOURNAL of June 29th, 1901, p. 1639, and he did not attempt to reply. To that article we again refer him and any one interested in the methods of antivivisectionist controversy.

The only thing the congress has done is to show that the appeal of antivivisectionists is now made frankly to the mob. In the graceful language of its President, they do not place their hope in the "idle rich," which, being interpreted, means people of education, but in the "workers"—that is to say, as may be gathered from the context, the ignorant. Their aim is, to use the expression of a foreign gentleman who read a paper, to "democratize" the movement. But science cannot be "democratized" in this sense. If it could, the first to suffer from the restriction of experimental research would be, not the "idle rich," but the toiling poor.

MEDICAL MEN AND THE WORKMEN'S COMPENSATION ACT.

ALTHOUGH the Workmen's Compensation Acts have gone a long way towards the universal insurance of workmen against accidents, the burden imposed on the employers is sometimes overestimated. It is assumed, for instance, that when an accident occurs the employer can at once be held responsible for all the consequences, and that even if compensation be not awarded under the Act, all the medical and other expenses must be borne by him. There appears to be an impression in some quarters that the Workmen's Compensation Acts impose upon employers a duty to pay the fees of the workman's medical adviser. No doubt he has to do so indirectly when compensation is recovered, but the Act imposes no direct liability upon the employer. Confusion has perhaps arisen owing to the fact that medical men are mentioned in the Act, and in certain events may take a very important part in its administration. Thus, it is provided that in certain cases the judge or arbitrator may, in a difficult case, refer the question of liability to a medical referee. Again, where a workman has given notice of an accident, he must, if so required by the employer, submit himself for examination by a duly qualified medical practitioner provided and paid by the employer; and if he refuses to submit himself to such examination, or in any way obstructs the same, his right to compensation, and any proceeding under the Act in relation to compensation, shall be suspended until such examination takes place. The solution of the question is not to be found in the Acts which have been passed within recent years providing almost universal compensation for accidents for workmen. The Workmen's Compensation Acts merely have the effect of rendering the question more urgent, for practitioners are sometimes disposed to assume that, inasmuch as the employer must, in the majority of cases, pay compensation for the accident, he will also be required to defray any medical expenses to which the injured workman may be put. This, however, is an erroneous assumption, whether the workman is or is not entitled to make a claim for compensation. The law relating to master and servant embodies no general principle that the master is bound to provide medical assistance. This is an obligation which must, and can, only arise from contract. We recall a case in which a servant hired at a weekly wage had his arm broken while driving his master's team, and was attended, in his mother's house, by his master's surgeon, who was accidentally passing at the time. In these circumstances it was held that the surgeon could not recover from the master. This was a case of a domestic servant, but the principle upon which it was decided also applies to servants in husbandry and to workmen. It follows that a medical practitioner who is hastily summoned to render first aid to an injured workman must not look to the employer for his fees. If, however, he first see the employer, or the responsible manager who has authority to make the necessary bargain on behalf of the employer, the matter is put upon a different footing. It must not be assumed, however, that every foreman or fellow-servant has authority to call in medical assistance and so charge the employer with liability to pay the fee. In a case which arose in connexion with a railway accident the court held that a railway servant—for example, the guard of a train—had no implied right to call in medical aid to the assistance of injured passengers at the expense of the company. The general manager of a railway, however, has the necessary authority.

THE BLIND ANTIVIVISECTIONIST'S DOG.

THE cult of the dog, which is the animal about whose comfort most antivivisectionists are mainly, if not solely, concerned, leads its devotees into remarkable aberrations. There is, or rather was—for he has faded into nothingness—the legendary Gower Street dog which ran into a shop with a tube in his throat. Then there is the Brown Dog of Battersea, who has become a fetish, even an idol. Some sentimental persons profess to believe that the mythical sufferings of that animal appeal to the tender heart of the Battersea rough. It does not, however, prevent his manners from being ferocious. But the Brown Dog is the idol only of one sect of antivivisectionists; another sect, whose mouthpiece is Miss Beatrice Kidd, repudiates, on behalf of her Union, all connexion with the Battersea "Martyr's Memorial." Now we have a third dog, who has led his blind sympathizers into a ditch. In the House of Commons Mr. Ellis Griffith asked the Home Secretary whether his attention had been called to a public experiment performed on a bulldog by Dr. Waller. He described, to the horror of Mr. Swift MacNeill and some kindred spirits, how a leather strap with sharp nails was secured around the meek animal's neck, while his feet were immersed in glass jars containing salts in solution, and the jars were connected by wires with galvanometers. Mr Gladstone explained that this dreadful experiment consisted in making the dog stand for a time in water to which common salt had been added. "If," continued the Home Secretary, "my honourable friend "has ever paddled in the sea, he will understand the "sensation. The animal—a finely developed bulldog— "was neither tied nor muzzled. He wore a leather "collar ornamented with brass studs. Had the experi- "ment been painful, the pain no doubt would have "been immediately felt by those near the dog. There "was no sign of this." Mr. Gladstone, therefore, did not propose to take any action. The House roared with laughter, all the more when Mr. V. Kennedy asked the Home Secretary with apparent seriousness whether the dog had been drugged for the experiment Is an anaesthetic considered necessary before paddling in the sea in Ireland? The gentlemen who treated the matter with such portentous solemnity remind us of the elder Sheridan as described by Dr. Johnson: "Why, Sir, Sherry is dull, naturally dull; but it must "have taken him a great deal of pains to become what "we now see him. Such an excess of stupidity, Sir, is "not in Nature." The story is characteristic of the antivivisectionist. The slightest trouble would have enabled Mr. Ellis Griffith to discover the truth about the experiment, which was made on May 12th at the ladies' *conversazione* of the Royal Society this year. But your "whole-dogger" does not wish to know the truth. The "platform fact" is so much more picturesque. For ourselves, we hope the antivivisectionist will go on discovering similar atrocities; there are plenty of them to find out, and their exposure helps to cover the advocates of a peculiarly disingenuous agitation with deserved ridicule.

PROPORTIONAL REPRESENTATION.

THE Metropolitan Counties Branch of the Association has again conducted its election of Representatives on the Central Council and also of its vice-presidents by the method known as the *single transferable vote* system. The Branch has had the advantage of the assistance of the officers of the Proportional Representation Society at each of the three elections at which the method has been used, so that whatever difficulties might have presented themselves at first have been overcome, and the members of the Branch Council, who have taken active part in the elections, are now in a position to conduct an election on the proportional system without fear of mistake or failure. The experience of the last elections does not differ materially from that of its predecessors, and every one concerned has been able to endorse the opinion, often expressed by the advocates of the system, that the working is smooth and satisfactory. It is a curious point that the number of voting papers sent in was almost the same as last year, but it should be recorded that, as compared with 1905, there has been a considerable falling off. Whether this is due to a fear on the part of members of the altered and somewhat unusual form of voting paper, or whether some reason entirely strange to the form of election was operative, cannot be decided, but members can be assured that the voting in the case of proportional representation elections is straightforward and simple. There were a few spoiled papers, but these were for the most part declared invalid on account of the absence of the member's signature. A glance at the details of the elections, given in the SUPPLEMENT of June 26th, will show that, while the system has definite uses in the election for representatives for the Central Council, its advantages for the election of vice-presidents is less evident. This might have been anticipated, for the office of vice-president of the Branch is not one which is so eagerly striven for by the various Divisions and various parties in the Divisions as is the position on the Central Council. The three members who received the greatest number of first votes were elected almost at once, since Sir Victor Horsley had a *quota* from the first and Drs. L. Shaw and Ford Anderson received a *quota* on the distribution of Sir Victor Horsley's surplus votes. The operation of the system was clearly shown by the way in which Drs. Ker and Haslip, who polled less first choices than Dr. Wallace, obtained sufficient votes on the subsequent transfers to secure seats. It may be taken that under the old system Drs. Wallace and Ker would have been returned in response to a following of 34 and 29 members out of some 558 voters, a number which certainly could not be held to reflect the opinion of the members as to the desirability of these two candidates securing seats. At the election the second and further choices showed that over one-sixth of those voting desired that seats should be given to Drs. Ker and Haslip, and they were therefore elected. Since true party politics do not enter into the constitution of the Association, it would be erroneous to speak of the representation of minorities; but as it appears reasonable to suppose that each candidate is known especially for the views which he takes on the several questions exercising the government of the Association, the effect of the system is to ensure that opinions which are sufficiently widely held must be voiced in the Central Council. Under the regulations set forth in the Charter, however, this method of election would no longer be available, as single-member constituencies would be substituted for the present system. The attention of members interested in the subject should be drawn to the June and July numbers of *Representation*, in which the advantages of proportional representation are set forth at length in the evidence given before the Royal Commission on Electoral Systems.

FIRST AID IN ELECTRICAL INJURIES.

PROFESSOR E. A. SPITZKA, of the Jefferson Medical College, Philadelphia, has published in pamphlet form a reprint of his paper from the *Journal of the Medical Society of New Jersey*, under the title of "The Resuscitation of Persons shocked by Electricity." He has

had special opportunities of noting the effects produced by electrocution in the case of criminals in the United States. The death penalty under these conditions, he says, is undoubtedly painless and practically instantaneous. The vital mechanisms of life, circulation and respiration, cease with the first contact. Describing the phenomena observed at a necropsy, he says that the maximum damage is wrought in the nerve system, though the heart, at first flaccid, rapidly assumes a tetanized condition, and the blood is profoundly altered bio-chemically. Sections made of the spinal cord revealed curious circular areas with a peripheral zone of condensation, which faded off into the surrounding unaffected areas. They seemed to resemble gaseous emphysema, and were possibly due to electrolytic liberation of gas. The prognosis in cases of electrical accidents is good only when there is some heart action and respiration, heart action particularly. In first aid the patient's head should be kept higher than the rest of his body, and artificial respiration should be attempted by compressing the thorax with the hands applied flat to the sides and lower part of the chest rather than by raising the arms. This action should be continued at the rate of 18 per minute. Heart action may be encouraged by massage over the heart region, by faradization, and by adrenalin injection, according to the method of Crile. "What thou doest do promptly," however, is the main thing. Attempts at resuscitation which are made seven to ten minutes after apparent death may re-establish respiration and circulation, but consciousness is not regained. Apparently, there is imperfect recovery of the brain proper after a cerebral anaemia of abcut seven minutes' duration.

THE RADIO-ACTIVITY OF MINERAL WATERS.

IN the course of a long article on the influence of mineral waters upon diseases of digestion and metabolism,[1] Baumstark points out that Sella and Pocchinetto first showed that air which had been conducted through water had gained in conducting power. Thomson and Himstedt confirmed this, and also showed that different kinds of water possessed this property in different degrees; that water fresh from deep springs was the most active, and that when exposed to the air it soon lost it. Elster and Geitel showed that different earths and the deposit from mineral water had the same property. As radium emanations have an influence on the life of the cell, and these emanations are of the same nature, the possession of radio-active properties might explain the utility of various chemically indifferent waters, and also the fact that the bottled waters are not so active as the fresh water. Speculation has been rife, and it is supposed that the air of the bath house is an important factor, as the radio-activity can be demonstrated in the rooms at Wiesbaden and Baden-Baden. Effervescing waters soon lose their activity, so that the water itself contains very little. Radio-active baths are said to cause, in rheumatic joints, a primary reaction followed by improvement. Kronfeld pointed out that for ages the people in the neighbourhood of the mines had been in the habit of wearing a little bag of pitchblende as a charm against rheumatism. Deutwitz claims that the miners themselves never suffer from gout, neuralgia, or rheumatism. Kalmette asserts that the urine, though not normally radio-active, becomes active after drinking the Gottstein waters. These interesting but merely clinical and very unsatisfactory observations require strict investigation by physiological methods. Bergell and Bickel, working with the water of the Wiesbaden "Kochbrunnen," came to the conclusion that the emanation partially prevented the usual inhibitory action of the sodium chloride of the water on peptic digestion *in vitro*. Experiments on a dog's stomach by Pawlow's method were entirely negative. Baumstark thinks that it will be found that the effects of the emanations are less than was originally expected.

[1] *Albu's Sammlung*, vol. i, No. 8.

THE MEDICO-LEGAL SOCIETY.

LAW and medicine met once more on a semisocial, semiprofessional, footing under the aegis of the Medico-Legal Society at its annual dinner at the Holborn Restaurant on July 13th. The two professions were equally well represented. A member of the High Court, to whom the society owes much of its success—its president, Mr. Justice Walton—was in the chair, while the guests included the Master of the Rolls, the junior branch of the legal profession being represented in the person of Mr. J. S. Beale, President of the Law Society. Of medicine, Mr. H. T. Butlin, President of the Royal College of Surgeons, was the principal representative, while Sir William Collins, who proposed the toast of the united professions, being a member of the House of Commons, may be taken as representing law in the making. He pointed out sundry links between medicine and the law, and reminded his audience that the supreme law of all was the health of the people. He pointed out, too, that the rules of the society permitted of the election of intelligent laymen, and advised all such to join it forthwith, on the ground that every one was necessarily concerned in medico-legal matters from his antenatal to his *post-mortem* condition. Sir H. H. Cozens Hardy, who replied, recorded as a common characteristic of medicine and law that in neither profession was any man thought the more of because he possessed money, or esteemed the less owing to any particular belief which he might happen to hold. Speaking of work in court, he said that there must often be occasions on which there was difference of opinion, but those on which there should be conflicting evidence as to facts must be rare. Lawyers had long since given up the practice of writing their opinions in Norman French, and he hoped that before long doctors would similarly give up their own particular phraseology, more especially nowadays when the Legislature had adopted the habit of combining legal and medical provisions in a single Act of Parliament. A reply came also from Mr. Butlin, who concluded his remarks by proposing a toast to the society itself. Naturally, he had much to say in its favour, for it is a body possessed, amongst other attractions, of much educational power. In bringing together medical men and lawyers and facilitating discussions between them on topics in which both have a common interest, it smooths the path to a better understanding each of the other's point of view. This is all the more desirable because the relations between medical men and lawyers in court often have a directly opposite effect. It may be added, too, that unless the society had a high actual and facultative utility, it is unlikely that Mr. Justice Walton, who is not one of the least hard worked of His Majesty's judges, would have remained in office as president for three years in succession. In the course of the evening it was mentioned that the society now has 231 members; if its value were properly recognized it would have at least three times that number.

MEDICINE IN WEST AFRICA.

A SUMMARY of the report of the Colonial Office Departmental Committee on the West African Medical Staff was issued on July 9th as a Parliamentary paper,

and an abstract appears in another column. The report, which is accompanied by a memorandum by Lord Crewe, Secretary of State for the Colonies, deals with a subject frequently mentioned in these columns during the past few years, namely, the organization and administration of the body in question. It is admitted on all sides now that the complete development of the West African colonies, and the vast adjoining Protectorates is bound up, like that of most other typically tropical territories, with the efficiency of the medical arrangements made, or in other words, in this instance with that of the West African Medical Staff, which practically represents the whole professional advice at the disposal of the local authorities. Hitherto the service has managed to attract excellent recruits, but for many reasons it has failed to satisfy them; sanitary progress has, therefore, tended to lag, and as the result of representations made in this JOURNAL and by a memorial from members of the staff itself, the Secretary of State decided last autumn to appoint a committee to consider the complaints made and suggest remedies. The suggestions seem on the whole promising, but we reserve consideration of the matter, as it now stands, until next week.

THE ANNUAL MEETING.

WE are advised that it is desirable that members proposing to attend the Annual Meeting of the British Medical Association in Belfast—and the warning extends to Representatives travelling to the Annual Representative Meeting opening on July 23rd—should at once take steps to engage berths on the cross-Channel steamers and sleeping accommodation in trains. The routes were enumerated in an article published in the BRITISH MEDICAL JOURNAL of July 3rd, p. 27. The direct routes for England and Wales are by Liverpool, Fleetwood, Heysham, and Holyhead and Greenore. The shortest sea route is via Stranraer and Larne, leaving a short railway journey from the latter port to Belfast. Another short sea route is via Holyhead and Kingstown, the sea passage being about three hours, while the railway journey from Kingstown to Belfast occupies about the same time. By the Holyhead and Greenore route the sea passage is about four and a half or five hours, while the railway journey from Greenore to Belfast occupies about one and a half hours. We are asked to call the attention of Representatives in the Northern and Midland Divisions to the fact that a train by the route via Fleetwood leaves Manchester (Victoria Station) at 9.10 p.m. on July 22nd, and runs alongside the steamer at Fleetwood. The Representatives travelling by this train and route are advised to book berths at once by letter addressed to Commander Baugh, Marine Superintendent, Fleetwood. Members who have not yet sent in the form issued in the JOURNAL of June 19th, page 1521, July 3rd, advertisement page 9, July 10th, advertisement page 7, and again this week (advertisement page 9) should do so at once if they desire to obtain the railway vouchers entitling them to the special concessions which have been arranged. In the SUPPLEMENT for this week will be found particulars of excursions on Saturday, July 31st, to Carlingford Lough and the Mourne Mountains, to Portrush and the Giant's Causeway, and to Glenariff and the Antrim coast road.

THE University of Geneva has conferred on Lord Lister the honorary degree of Doctor of Medicine. A similar distinction was bestowed at the same time on Professor Haeckel, of Jena, and Madame Curie, of Paris.

Medical Notes in Parliament.

[FROM OUR LOBBY CORRESPONDENT.]

The Experiments on a Bulldog at the Royal Society Conversazione.—Mr. Ellis Griffith asked the Secretary of State for the Home Department whether his attention had been called to a public experiment performed by Dr. Waller on a bulldog at the *conversazione* of the Royal Society at Burlington House on May 12th last, whereby a leather strap with sharp nails was secured around the dog's neck, his feet being immersed in glass jars containing salts in solution, and the jars being connected by wires with galvanometers; whether, in view of Section 6 of the Cruelty to Animals Act, 1876, which prohibited any exhibition to the general public of experiments on living animals calculated to give pain, he would say whether a licence had been granted to Dr. Waller for the performance of this experiment; whether Burlington House had been registered by the licensee for this purpose under Section 7 of the Cruelty to Animals Act, 1876; and whether any action had been or was being taken in reference to the matter. Mr. Gladstone replied that he had made inquiries. Dr. Waller held no licence for this demonstration, and Burlington House was not registered under Section 7 of the Cruelty to Animals Act, 1876. He understood the dog stood for some time in water, to which sodium chloride had been added, or, in other words, a little common salt. If his hon. friend had ever paddled in the sea he would understand the sensation. The dog—a finely developed bulldog—was neither tied nor muzzled. He wore a leather collar ornamented with brass studs. Had the experiment been painful, the pain no doubt would have been immediately felt by those nearest the dog. There was no sign of this, and he did not propose to take any action. In answer to further questions, he said that the object of the experiment was to show the pulsation of the blood and other interesting matters in the human body. It was absolutely painless. The animal was not drugged, and it was an ordinary demonstration causing not the slightest pain.

Antivivisectionist Processions.—Lord Robert Cecil asked the Secretary of State for the Home Department whether his attention had been called to the proposed two processions of antivivisectionists; whether he was aware that for the purpose of these processions certain highly provocative banners were prepared; that the organizers of one of the processions had expressed the intention of employing certain roughs from Battersea to keep order; and whether, in view of these facts, he would take steps to prevent the processions taking place. Mr. Walter Guinness asked a similar question, and Mr. Gladstone replied that processions of antivivisectionists had been announced to take place on the 10th and 24th inst., but the police had been assured that provocative banners would not be carried. All necessary arrangements would be made by the police for the preservation of order.

Vivisection.—Mr. Ellis Griffith, who is the promoter of the Dogs Exemption Bill, which is down for the adjourned debate on second reading on July 26th, has introduced another bill, called the Cruelty to Animals Amendment Bill. Its full title is "A Bill to amend the Cruelty to Animals Acts," and it consists of the two following clauses:

1. From and after *the passing of this Act* any person (being the owner of the dog) who shall have been convicted of cruelty to such dog under section two of the Cruelty to Animals Act, 1849, shall, at the discretion of a court of summary jurisdiction, be deprived of the custody of such dog and shall forfeit all claim to such dog or its value.
2. A court of summary jurisdiction shall, if they deem fit, order any dog of which its owner shall have been deprived under the foregoing section to be handed over to any recognized society for the protection of animals, or any person whom they deem fit to have the charge of such dog, to be kept or destroyed at the discretion of the court, provided that under no circumstances shall any such dog be used for the purpose of vivisection or other experiments.

The two bills with similar titles introduced by Mr. George Greenwood have been dropped, and this new bill has been put down for second reading on July 29th.

The Millbank Typhoid Carriers and their Treatment.—Sir William Collins inquired of the Secretary of State for War on Monday how many of the five supposed typhoid carriers at Millbank, reported on in Paper Cd. 4609, who were undergoing treatment in January-March of this year, were now pronounced to be free from *Bacillus typhosus*; whether these men exhibited any signs of ill-health beyond the excretion of such bacilli; whether the cases treated with general vaccine continued to excrete bacilli many weeks after the vaccination; what results had attended the use of the specific vaccine from which better results were hoped for; and whether cases were recorded in which two years after cured of typhoid these bacilli had been found in excretions? Mr. Haldane replied that only one of the five men was believed to be cured at present. None of these men exhibited any signs of ill-health beyond the excretion of the bacilli. The general vaccine had no effect on the excretion of the bacilli, and the excretion continued until treatment with the specific vaccine was commenced. The specific vaccine had not given any better results than the general vaccine. With regard to the last part of the question, reference to the report contained in Command Paper No. 4609 would show that such cases had been recorded.

Colour Blindness (Board of Trade Test).—Mr. Henniker Heaton asked the President of the Board of Trade whether there was any civilized country in the world, besides our own, which regarded the wool test, the official test of the Board of Trade, as a reliable test for colour blindness; whether he was aware that not a single ophthalmic surgeon of eminence in this country was of opinion that the wool test was an efficient one; and whether he could state how many, if any, of the examiners of the Board of Trade, either those employed in the first instance or on appeal, had any knowledge of physiology or ophthalmology? Mr. Churchill replied that he was obtaining information as to the countries which had adopted the Holmgren wool test as a test for colour blindness in the mercantile marine. This test was adopted by the Board of Trade on the advice of a committee of the Royal Society, which comprised both eminent physiologists and physicists, and he had reason to think that the highest scientific opinion was in favour of its efficiency. One of its advantages was that it could be applied by persons who possessed no knowledge of physiology or ophthalmology. No such knowledge was, therefore, demanded of the Board of Trade examiners in the first instance. But in the supervision of their tests, in the instructions of their examiners, and in the conduct of their special examination on appeal, the Board had the advantage of the services of two acknowledged authorities on colour vision—both Fellows of the Royal Society, who hold the degree of Doctor of Science.

The Belfast University and the Mater Infirmorum Hospital.—Mr. Hugh Barrie asked the Chief Secretary for Ireland whether it was proposed to affiliate the Mater Infirmorum Hospital (Belfast) to the new Belfast University; and, if so, were its teachers and teaching to be recognized; and would the members of its medical staff be admitted upon the Examining Board of the University? Mr. Birrell said it was not proposed to affiliate the Mater Infirmorum Hospital to the Queen's University. It was proposed by the medical faculty that the hospital should be recognized as a place for clinical teaching, as it was by the old Queen's College, but this was subject to the approval of the Senate. The appointment of examiners was for the Senate, upon the recommendation of the Academic Council. He had no means of knowing how far the medical staff of this or any other hospital would be recognized by the Senate.

Dairy Inspection in Ireland.—Mr. Sheehan asked last week whether district councils in Ireland had appointed as inspectors of dairies local subsanitary officers who also held the position of relieving officers, and whether such appointments would be sanctioned in view of the fact that the time of these gentlemen ought to be already fully occupied. Mr. Birrell replied that he understood that in sixty-eight districts the sanitary subofficers, who frequently hold the position of relieving officers as well, had been appointed to act as inspectors of dairies. The Local Government Board considered it unnecessary to press local authorities to appoint separate inspecting officers of dairy premises in localities where the dairying industry did not assume large proportions. A sanitary subofficer had opportunity of observing defects or insanitary conditions in dairy premises, and there was no reason to suppose that his time was so fully occupied with other official duties as to prevent his carrying out such inspections. Moreover, under the Board's Sanitary Orders of May, 1900, it already formed part of his duties in a district where no inspector of dairies had been appointed to inspect dairies, cowsheds, and milkshops, and to report to the sanitary authority thereon. The sanction of the Board was only required so far as concerns the remuneration of officers under the Dairies Order.

The Sanitary Condition of Ramsey.—On Monday Mr. Boulton put questions to the President of the Local Government Board respecting the water supply, drainage, and the prevalence of infectious disease at Ramsey, and pressed for the visit of an inspector and the enforcement of the Public Health Acts. Mr. Burns answered that he was aware that the consulting medical officer of health of the county council had reported unfavourably on the water supply and disposal of the sewage of the town. The urban district council had decided to take some tentative action as regards the water supply; but, as previously stated, they considered the expense of providing a new system of sewers, which would also necessitate a water supply, to be prohibitive. He had made inquiry, and found that 53 cases of scarlet fever were notified to the medical officer of health in the months of May and June last, and that 5 deaths from the disease occurred during those months. As he had stated twice before, he had not received any such complaint of default on the part of the district council with respect to sewerage and water supply as would enable him to take compulsory action under the Public Health Act. He had, however, given directions that one of the medical inspectors of the Local Government Board should visit the district and make a report with respect to it.

Vaccination Exemption Orders and Fees.—In answer to Mr. Tyson Wilson, Mr. Gladstone stated last week that no fee was payable to a justice for taking a declaration under the Vaccination Act, 1907, or for any other act done in his magisterial capacity. A fee was chargeable by the justice's clerk if he was present and performed the service in respect of which the fee was authorized. Such fees had to be paid by the clerk into the county or borough fund. No complaint had been made to him of any justices keeping them for their own use.

England and Wales.

[FROM OUR SPECIAL CORRESPONDENTS.]

LEEDS.

DEATH OF THE CHANCELLOR OF THE UNIVERSITY.

By the death of the Marquis of Ripon, which took place suddenly on the evening of July 9th, the University of Leeds has lost its first Chancellor and one of its warmest friends. As is well pointed out in a most appreciative notice in the *Yorkshire Post*, Lord Ripon's most noteworthy achievement in regard to education was the part he took in helping to found the Yorkshire College, on which the University of Leeds, as it now exists, was built. In the year 1879 he formed one of the deputation which waited on the Duke of Richmond and Gordon, then Lord President of the Council, to urge the establishment of a new university for the North of England with which the Yorkshire College could be affiliated. In 1882 he succeeded the late Lord Frederick Cavendish as President of the college, and up to the last his interest in the welfare of the college and of the university never flagged. In all the great events connected with the college and the university he took a leading part. These included the affiliation of the Leeds School of Medicine, the opening of the new wing of the college in 1885 by His Majesty then

Prince of Wales), the association with Manchester in the Victoria University, the opening of the new school of medicine in 1894 by the present Prince and Princess of Wales when Duke and Duchess of York; and finally the acquisition of a Charter for the University of Leeds, the raising of additional funds, and the opening of the new buildings at College Road, as recently as July, 1908, by the King and Queen. In the hall of the university there now hangs a portrait of the late Chancellor, by Sir Hubert von Herkomer. This was formally presented to the university by the subscribers to a portrait fund, many of whom were adherents of the university and admirers of Lord Ripon. It will be a source of lively satisfaction to all who are interested in the welfare of the university that it possesses the admirable likeness of one who, from its inception, has been its most consistent and loyal supporter. The funeral at Studley Royal, on July 13th, was attended by many members of the court and staff.

THE HEALTH CONGRESS.

The Royal Sanitary Institute and the Royal Institute of Public Health have for the first time in their history agreed to hold a joint congress in Leeds. This congress is being supported by the City and University of Leeds, and promises to be a great success. It begins on Saturday, July 17th, and will be continued during the greater part of next week. Already intimations of intention to be present have been received from about 800 non-residents in Leeds, and it is believed that the number of visitors and delegates may amount to 1,200. On Saturday a congregation of the university will be held to confer honorary degrees on Colonel Harding, the President of the congress, and on Sir James Crichton-Browne and Major Ronald Ross, C.B. Among the social attractions of the congress will be a reception by the Lord Mayor and a *conversazione* given by the university in the medical school buildings.

WEST YORKSHIRE.

BRADFORD EDUCATION MEDICAL OFFICER'S REPORT.

DR. RALPH H. CROWLEY'S report to the Bradford Education Committee for the year ended December 31st, 1908, is the last that he will issue as medical officer to that committee, for, as recently announced, he has been appointed Assistant Medical Officer to the Board of Education. The report discusses with much ability a variety of subjects relating to school life—from the type of building to the home and the child's extra school environment. The number of children on the school registers between the ages of 3 and 14 was approximately 44,000.

Attention is drawn to the arrangements made for the correlation of the school medical service with the public health service in regard to the external sanitation of school premises, and the notification and arrangements made in regard to infectious disease and verminous children. Over 10,000 children were examined during the year and classed as normal and abnormal. The number referred for treatment was about 10 per cent. of those examined, excluding children with defective teeth; Dr. Crowley finds reason to conclude: (*a*) That practically all children have had measles by the time they reach the age of 7 years; (*b*) that about every other child escapes whooping-cough though frequently exposed to the infection; (*c*) that mumps and chicken-pox are less prevalent among children than is usually thought. Children are referred for treatment to the private practitioner or the hospitals, but if not attended to are compelled to come to the school clinic where during the year 841 belonging to the following classes were treated: (*a*) Defective vision; (*b*) ear discharge; (*c*) ringworm; (*d*) sores of all kinds, for example, sore heads, impetigo, scabies, sore eyes and eyelids. A number of children varying from 1,300 to 2,600 in different months received free dinners and some of them free breakfasts. A considerable number of spectacles were given free. Dr. Crowley reports on the defective condition of the children's teeth and suggests the appointment of a school dentist. Reports are made on the blind, the deaf, the crippled, the epileptic, and the mentally deficient. The whole report evidences the work of a conscientious and able reformer, carrying out his duties with a single purpose—the moral, physical, and mental development of the child. At this no one can cavil. But of the wisdom of the policy of doing all this at the expense of the public, there is in Bradford, as in all places, a great deal of criticism and at times a certain amount of resentment on the part of the ratepayers.

LIVERPOOL.

NEW OUT-PATIENT DEPARTMENT AT THE ROYAL INFIRMARY.

ON July 7th the foundation-stone of the new out-patient department of the Royal Infirmary was laid by Lord Derby. For more than a hundred years after the foundation of the institution no serious attempt was made to establish an out-patient department, and until the opening of the present buildings in 1891 the only out-patients seen were minor casualties and patients who applied for admission. Cases considered unsuitable for admission were, as a rule, referred for treatment to the public voluntary dispensaries, of which there are three in the city. For many years, however, the need for a regular out-patient department was felt, more particularly from the point of view of instructing the students, and in the new building the space on the ground floor under one of the wards was fitted up as an out-patient department. Almost from the first, however, the space so provided was found to be inadequate, and for nearly twenty years the committee has from time to time been trying to extend its capacity by removing partitions, taking in corridors, and such-like expedients. With the establishment of various special departments, and an increase in the *personnel* of the assistant staff the number of out-patients has steadily increased. In the ten years ending 1888, when the old infirmary was closed, the average number of out-patients was just over 8,000, in 1898 the number had risen to 12,500, and in 1908 to 20,700. The total annual attendances, including redressings, amount now to 80,000 a year. In view of the increasing numbers and the inadequateness of the building, the medical board a few years ago made a formal representation to the committee as to the need of a new out-patient department constructed on modern lines. To provide a site it was necessary to acquire one of the pieces of land adjacent to the infirmary, covered by small houses, and this was done by buying up the houses as they fell vacant, with the aid of a portion of the Mitchell Banks Memorial Fund. For some time the committee naturally hesitated to add to its responsibilities by commencing the building of a new department which is expected to cost between £25,000 and £30,000; but on receipt of the noble gift of £10,000 from the Bickersteth family in memory of the late Mr. E. R. Bickersteth, with other generous contributions, it was decided to delay no longer. The city council has applied for parliamentary powers to enable it to subscribe £5,000 towards the cost of the building.

In architecture and material the new building will closely resemble the main building. On the ground floor ample and suitable accommodation will be provided for medical and surgical cases. The large hall, 75 ft. by 35 ft., will have seating for 250 people. On the first floor will be the gynaecological, ophthalmic, and throat and ear departments, access to which will be by a lift and a gallery around the central hall. In the basement will be the lock, skin, and massage departments. The part of the hospital set free by the removal of the out-patients will be utilized for small casualty wards and the provision of a few beds for special cases. The committee is making a special appeal to provide a maintenance fund to replace that which was raised twenty years ago, and is now nearly exhausted.

LONDON.

BARROW FOOD.

THE London County Council decided on July 13th to give public notice of its intention to consider at a future meeting the desirability of promoting legislation to ensure the observance of proper sanitary regulations in regard to articles of food exposed for sale in the streets, or other places, where the powers at present possessed by the

Council do not apply. The Public Health Committee, in a report on the subject, pointed out that premises, such as yards, stables, and arches, in which food is sold or prepared for sale can be dealt with under Section 8 of the London County Council (General Powers) Act, 1908; but the section does not apply to barrows and other vehicles on which food is exposed by costermongers for sale. A large amound of foodstuff is sold in London in this way, and from evidence before it the committee felt it to be most necessary that sanitary authorities—that is, the City Corporation and the metropolitan borough councils—should be able to exercise control in the matter.

The Sanitary Condition of Stables.

At the same meeting of the Council the committee recalled attention to Dr. Hamer's inquiry, made in 1907 and 1908, as to the extent to which the fly nuisance is caused by accumulations of offensive matter. The investigations showed that horse manure is pre-eminently the breeding ground for house flies. In addition to having power to order the more frequent removal of horse manure, the committee was of opinion that sanitary authorities should be able also to deal with the structure and paving of stables, and to enforce similar regulations to those which obtain in the case of cowsheds.

WALES.

Mussel Poisoning.

At the meeting of the Health Committee, held at Barry on July 1st, it was reported that in addition to a fatal case of poisoning through eating mussels collected at the docks at Barry there had been several other cases of poisoning. Visits had been paid to houses in several streets, as well as to the trimmers' lodge at the docks, and in every house visited persons were found to be suffering more or less from the effects of poisoning. Several coal trimmers who had partaken of the shellfish had also complained of illness. Chief Inspector Sommerfield said that as a result of his visit he had seized about 40 lb. of mussels and destroyed them. The shellfish had been collected from the gates, piers, and jetties at the docks. Dr. J. Neale, Medical Officer of Health, said that it was highly dangerous to eat shellfish from the dock on account of the material they lived upon. No action could be taken without the permission of the general manager of the Barry Railway Company, and it was agreed that Dr. Neale should interview that gentleman with a view to placing printed notices around the docks warning people against the danger of taking shellfish from the docks for food.

Scotland.

[From our Special Correspondents.]

Scottish Arctic Expedition.

Dr. W. S. Bruce, of the Scottish Oceanographical Laboratory, Edinburgh, has chartered a steam trawler, and is having her refitted for a scientific expedition to Prince Charles Foreland, Spitzbergen. Dr. Bruce has already had experience in Arctic exploration. With the Prince of Monaco, he carried on exploration work for two seasons, especially as regards the topography, geology, botany, and zoology of Spitzbergen. He takes with him a strong scientific staff, including Mr. S. V. Burn Murdoch, Mr. John Matheson, of the Ordnance Staff of Scotland, and Dr. R. Brown, late of the *Scotia*. The expedition is expected to return to Scotland in September.

Finlayson Memorial Lectureship.

Sir Hector Cameron, on behalf of the committee of subscribers to the fund in memory of the late Dr. James Finlayson, of Glasgow, has presented a deed of gift to the council of the Faculty of Physicians and Surgeons, Glasgow, conveying to the council the future management of the fund. The income from the fund is to be held and applied as the endowment of a lectureship to be called the "Finlayson Memorial Lectureship." The lectures are to deal with pathology, or the practice or history of medicine.

Ireland.

[From Our Special Correspondent.]

Ulster Medical Society.

The annual meeting of the society was held in the Medical Institute, Belfast, on the evening of July 8th. Mr. T. Sinclair Kirk, President, occupied the chair. The reports of the Honorary Secretary, Honorary Treasurer, and Honorary Librarian were submitted and accepted by the meeting. The statement of accounts showed a balance of £70 to the credit of the society, and about £16 still due, but the charge for the cleaning, distempering walls and general renovation of the Institute, in all roughly about £30, has yet to be paid. On the motion of Dr. Calwell, seconded by Dr. Clements, it was agreed that the days of meeting in future should be fixed in the early part of each session and the members notified. Dr. J. J. Austin (Belfast), was elected President for the ensuing session (1909-10), and Dr. Darnell (Bangor), Dr. D. Maguire (Belfast), vice-presidents. Dr. Howard Stevenson was re-elected Honorary Secretary; Dr. J. C. Rankin, Editorial Secretary; Dr. V. G. L. Fielden, Honorary Treasurer; and Dr. W. L. Storey, Honorary Librarian. The President (Mr. Kirk) made a statement regarding the cup for the golf competition at the approaching visit of the British Medical Association.

South Africa.

South African Medical Congress.

The eleventh South African Medical Congress will be held in Durban, August 2nd to 7th, 1909. The congress will be opened by His Excellency Sir Matthew Nathan, K.C.M.G., R.E., Governor of Natal. The President is Dr. H. A. Dumat; the Vice-Presidents, Drs. W. Watkins-Pitchford and W. J. Hill; the Honorary Secretary, Dr. P. Murison; and the Honorary Treasurer, Dr. G. L. Bonnar. The work of the congress will be divided among six sections: Medicine, Surgery, Obstetrics and Gynaecology, Public Health, Ophthalmology, and special subjects.

Medicine.

In the Section of Medicine, the President of which is Dr. Hugh Smith, the special subject proposed for discussion is the rheumatic diseases, with special reference to causation and the effects of climate; it will be introduced by Dr. W. G. Rogers. A discussion on malignant new growths in the negro will be introduced by Dr. W. Watkins-Pitchford. A lantern demonstration on tropical diseases will be given by Dr. L. G. Haydon, with slides selected and lent by Dr. C. W. Daniels, Superintendent, London School of Tropical Medicine.

Surgery.

In the Section of Surgery, the President of which is Dr. E. T. E. Hamilton, the special subject proposed for discussion is gall stones it will be introduced by Dr. G. Ritchie Thomson.

Obstetrics and Gynaecology.

In the Section of Obstetrics and Gynaecology, the President of which is Dr. W. H. Maxwell, a discussion on extrauterine pregnancy will be introduced by Dr. G. A. E. Murray.

Public Health.

In the Section of Public Health, the President of which is Dr. A. M. Fleming, C.M.G., a discussion on tuberculosis amongst the natives of South Africa will be introduced by Dr. N. MacVicar.

Ophthalmology.

In the Section of Ophthalmology, the President of which is Dr. H. Symonds, a discussion on eye symptoms in connexion with the diagnosis of general medical and surgical affections will be introduced by Dr. A. G. Brinton.

Special Subjects.

In the Section of Special Subjects, the President of which is Dr. D. Macaulay, a discussion on the limits of medical charity will be introduced by Dr. W. Darley-Hartley.

Miscellaneous Papers.

Among the other communications promised are the following: Dr. A. Jasper Anderson, infective endocarditis; Dr. N. A. Butterfield, autointoxication; Dr. G. A. Casalis, the statics of the pelvic viscera and their relationship to the operative treatment of utero-vaginal prolapses, and notes on four cases of proliferating ovarian cyst adenomas of large size, and with extensive adhesions; Dr. E. L. Freer, orthopaedics; Dr. Ernest Hill, death-rates, in different sections of the community, in Natal, 1902–1908; Mr. R. L. Hitchins (Advocate, Durban) and Dr. P. S. Klots, closer union of the medical and legal professions; Dr. R. P. Mackenzie, the hospital question; Dr. A. Murray Gray, the children's charter, and the duty of the State towards the young; Dr. Percy A. Nightingale, treatment of blackwater fever; Dr. M. G. Pearson, convulsions in children—a preventable complaint; Drs. Lilian Austin Robinson and Hugh Smith, the psychic element in therapeutics; Dr. Andrew Stewart, concussion cataract; Dr. P. N. Vellacott, notes on malignant disease in the Orange River Colony; Dr. S. W. F. Richardson, notes on a case of acute pancreatitis—operation and recovery; Dr. H. Temple Mursell, case of splenopexy with gastro-enterostomy, and two cases of renal carcinoma.

Correspondence.

INSTRUCTION IN ANAESTHETICS FOR DENTAL STUDENTS.

SIR,—The President of the College of Surgeons sees no objection to the publication of the accompanying correspondence. I should feel obliged, therefore, if you could find room for it in your next issue.

From the reply of the Royal College of Surgeons, I think it is apparent that, as far as general anaesthetics are concerned, the recent regulation is intended to apply only to the administration of nitrous oxide.—I am, etc..

London, W., July 13th. J. FREDK. W. SILK.

July 7th, 1909.

To the President of the Royal College of Surgeons of England.

Dear Sir,

Our attention has been drawn to a regulation lately issued by the Council of the Royal College of Surgeons, by which, after October 1st next, candidates for the diploma "L.D.S." will be required to receive "a course of practical instruction in the administration of such anaesthetics as are in common use in Dental Surgery."

As teachers of anaesthetics at some of the principal Medical Schools in London, we take the liberty of pointing out to you that this particular phrasing (in common use, etc.) has already been understood in some quarters to include such substances as Ethyl Chloride, Ether, Chloroform, and the chief local anaesthetics.

We can hardly believe that this interpretation was in the mind of the Council when the regulation was originally framed, for it is obvious that, if so interpreted, many dental students would, on the strength of such instruction, claim the right to administer Chloroform and other drugs, a possibility which, in our opinion, would be highly objectionable and dangerous.

We trust that the Council will see its way to issuing a further regulation, stating that the instruction is to be confined to the administration of Nitrous Oxide.

We have the honour to remain,
Yours obediently,

J. BLUMFELD (St. George's and St. Mary's Hospital.
C. C. BRAINE (Charing Cross).
T. G. A. BURNS (Middlesex).
R. GILL (St. Bartholomew's).
R. J. PROBYN WILLIAMS (London).
G. ROWELL (Guy's).
J. F. W. SILK (King's College).

REPLY.

Royal College of Surgeons,
Lincoln's Inn Fields, W.C.,
July 9th, 1909.

Gentlemen,—

I am desired by the President to inform you that he submitted your letter of the 7th inst. to the Council at their meeting yesterday, and that in reference thereto the Council adopted the following resolution, namely:

That the signatories to the letter be informed that the Regulation, to which they refer, was adopted by the Council after full consideration of the different views which have been expressed regarding the administration of anaesthetics, and that the Council are not prepared to admit that the general anaesthetics specified by the signatories are "in common use in Dental Surgery," and must adhere to their decision.

I am, Gentlemen,
Your obedient servant,
S. FORREST COWELL,
Secretary.

*** Among the subjects of examination specified in the Regulations for the Licence in Dental Surgery, as given in the Calendar for 1908, p. 70, is "Anaesthetics, with special reference to their use in Dental Surgery." At its meeting on June 10th, 1909 (see BRITISH MEDICAL JOURNAL, June 19th, p. 1516), the Council adopted the following addition to the Regulations for course of study: "A course of practical instruction in the administration of such anaesthetics as are in common use in Dental Surgery."

THE TREATMENT OF SCHOOL CHILDREN.

SIR,—Dr. Sidney Phillips's last letter has, I think, made it clear that the reason he is so concerned for my ethical reputation and consistency is because he holds a totally different view to that which is usually held as to the meaning of consultation between medical practitioners, and has thereby misunderstood my simple statement that an out-patient officer could not act as a consultant to a medical inspector who had not treated, and could not treat, the patient under consideration.

To Dr. Phillips consultation apparently means the transference of a patient from one practitioner to another. It is a common complaint that this is the basis of too many so-called consultants' private practice. Some indeed have defined a consultant as one who transfers another man's patients to himself.

Now, sir, the whole point of my original criticism of Dr. Sidney Phillips's letter on this subject was to protest against the idea that the proposal to introduce the "consultative principle" into out-patient work could in any sense be met by the mere sending of a child to the department by a medical inspector. Dr. Phillips's statement in his last letter that I admit that "to accept a school child for treatment on the notification of a school doctor would be a consultation if allowed" can certainly not be substantiated by anything I have written. Such acceptance would not, even in the strictest sense, be the transfer of a patient, for the child has never been the patient of the medical inspector. Does Dr. Phillips call a medical examiner for life insurance an "insurance doctor," and regard the candidates as his "patients"? and would he consider that a medical practitioner whom such a candidate was advised by the examiner to see was acting as a consultant to the examiner? It is essential that medical men should recognize that mere recommendation of each other is not consultation. Tradesmen of all sorts who for various reasons cannot provide the public with what it wants recommend or give introductions to their fellow-tradesmen, but the man thus recommended is not said to act as a consultant to the man who sends him the custom.

Transfer of cases must constantly take place in the profession when patients move from town to town, or where their complaints are of a nature which the original practitioner does not care to treat. But the new practitioner cannot be said to act as a consultant to the old. He just takes on his *confrère's* patient. Similarly, of course, members of the profession who hold important positions in various departments of the public service, and whose duties do not include treatment, will often have opportunities of recommending persons who are ill to seek the advice of active practitioners. My "decree," as Dr. Phillips calls it, however universally applied, would not prevent these mutual courtesies between members of the profession, but my desire to use the English language correctly will not allow me to call such introduction a consultation nor to regard the active practitioner as a consultant to the public servant.

I have ventured to trespass on your space and to continue what seems in danger of becoming somewhat a personal discussion because I have a great belief in the introduction of the "consultative principle" as a possible solution of the out-patient problem. But the whole essence of such principle is that the patient should be sent to the department by his "doctor" in the ordinary sense of the word—the man who has examined him and has treated him and is willing to say what he has found and done, and is anxious to hear what the medical officer acting as consultant thinks about the case, and is prepared at once,

or after some special treatment has been carried out, to continue the ordinary treatment of the case. In these conditions the out-patient department becomes the poor man's consultant in the only proper meaning of the term. The out-patient department thereby secures a constant supply of important cases suitable for careful investigation or special treatment, and is able to return at once to the general practitioner cases which do not require further hospital assistance. The hospital secures for itself a definite position in the service of the medical poor, and does not become a promiscuous competitor with the Poor Law medical service, provident dispensaries, and the general medical practitioner.

I am confident that in the interest of the future of voluntary medical charity and of medical research and education, which have in the past been so closely connected with it that our great hospitals should, as soon as may be, put themselves in the relation I have indicated with other forms of medical relief. But when we are discussing how this can be done, we had better not call medical inspectors of school children school doctors, or speak of the transfer of a patient as a consultation.—I am, etc.,

July 12th. LAURISTON E. SHAW.

"THE DOCTOR AS A VICARIOUS PHILANTHROPIST."

SIR,—I hoped that after Dr. Gwatkin's just and scathing letter, no one would have been found to support the view so ably set forth by Dr. Wishart Kerr, that the members of our profession should never allow their feelings of pity for a suffering fellow creature to betray them into doing an act of kindness for which they may not be paid. I am the more disappointed, therefore, to see that Dr. Kerr has found so many champions.

Let me remind your readers that the injured child was brought to Dr. Kerr's surgery and that he refused to relieve its suffering until he received payment. Dr. Stewart may well call Dr. Kerr courageous. Most of us are guilty at times of acting unworthily, but few would have the courage to advertise the fact, or to suggest that such actions ought to be emulated. Indeed, afterwards we have the grace to feel ashamed.—I am, etc.,

Manchester, July 4th. E. VIPONT BROWN.

SPEECH FRIGHT.

SIR,—In the discussion on "speech fright" sufficient importance has not been given to the mental physiology of the question. The various "frights," such as stage fright, cricket fright, operation fright, company fright, etc., which figure so prominently in the life of to-day, are all akin in their nature, and they are especially manifested in two classes of people—those who are unaccustomed to the situation and those who have acquired some reputation, and therefore responsibility, in the art of which they are for the time being the expositors.

The key to the condition appears to reside in what has been aptly termed the *muscular element* of thought—that association of muscular remanets with ideational elements which form the "contents" of intellectual concepts. The paralysis of thought, speech, and action—the tripod on which is based the communication between ourselves and the external world, must be brought about by an agency which interferes with the harmonized interaction of the central elements. In the cases under consideration the agent of disturbance of the equilibrium is the emotion of fear. Though we are no nearer now than we ever were to understanding what an emotion, or, indeed, any other mental or nervous state, really is, we have yet made great advance in our knowledge of the physiological accompaniments of emotion, and an analysis of the emotion of fear shows what an important part the muscular system and the viscera play in the content of it. According to Professor McDougall, the emotion of fear is intimately connected with instinctive flight and instinctive concealment, the hurried pulse and respiration being due to the impulse to flight, whilst the sudden stopping of heart-beat and respiration and the paralysis of movement are due to the impulse to concealment. Does not common parlance say, "I could have sunk under the floor from fright," or "I would have given anything to have been able to run away"? In the changed action of the heart we recognize the governor-ball function of that organ, the object being to regulate the supply of blood to the central nervous system, for all these "frights" are central in origin, and must be accompanied with rapid circulation changes in the supply to the nervous system.

Now, fear, more than any other instinct, tends to bring to an end at once all other mental activity, rivetting the attention upon its object to the exclusion of all others (McDougall). In other words, there is a reduction to a state of mono-ideism, in which the free flow of thought and expression is impossible. This being so, "frights" are essentially nervous conditions, and therefore are much more likely to be influenced by nerve stimulants or sedatives, such as opium and quinine, than by cardiac energizers, such as alcohol, because the vascular condition is secondary to the mental state.

The best antidote to fear is experience, which means the acquisition of ready organized channels through which mental action can have full play, and these channels can only be burrowed out by a previous thorough study of the subject and by practice in its development.

The great art in public speaking is to keep well in view the end at which one wishes to arrive; if this is done, the intermediate play of ideas may be allowed full swing, but if the *leit-motif* is lost sight of there is great danger of being landed in a blind alley which has no connexion with the object for which the "speech" was undertaken. Practical speakers are well acquainted with this, and the speaking notes of some of the most distinguished orators are merely a few words punctuating the various milestones of the course. I have elsewhere (*Ex Cathedrâ Essays*) enlarged upon this subject of the incoherence (want of control) brought about by the neglect of this cardinal rule.

Active memory and active attention are intimately associated with will—are, in fact, a form of it; and, inasmuch as will is chiefly constituted by emotion, it is easy to see how a depressing emotion (or "mover"), such as fear, must affect the will and that power of control without which the directing force of attention cannot exist.

The degree of acuteness of these various "frights" depends upon the state of the bodily health and the inherent mental stability of the individual. There are some who from constitutional reasons can never be cured, but however practised and self-possessed a person may be, it is always good policy to have at hand a prompter or the reliant crutch of a few headings.—I am, etc.,

London, W., July 10th. T. CLAYE SHAW.

PSYCHOLOGICAL BASES OF ORATORY.

SIR,—May I as a deserter from medicine to law tell your readers a few things that have happened to me, and which illustrate your article on the psychological bases of oratory? The first is that a debating society is the best of all schools of oratory. No one who has been stopped in the midst of a fervid peroration by the irruption of a band of malcontents whose leader promptly raised a point of order is likely to be much troubled in the future by interruptions. A speaker who is dull finds every one in the room talking or turning to the writing tables or reading the newspapers. Long words and pompous language provoke ribald remarks, but simple language and terse phrases, uttered by one who has really tried, however imperfectly, to get up the subject, are sure to be heard with attention. Lawyers can never forget that their duty is to assist the court in selecting the correct deduction from the admitted or controverted facts. Then, again, nearly every one makes notes of some kind, unless he has a junior or a solicitor behind him to pull his gown if he has not dealt with all points before sitting down. Nervousness is merely a question of habit. People are not nervous in a familiar court or before a judge who has previously been sympathetic (though adverse). It is the first step that is so hard, from our very infancy.

As to premeditation, I can even now, after twenty-five years, recall Dr. Liddon walking along the towing path above Godstow, evidently working out one of those magnificent sermons which no living orator has surpassed.

There is another matter to which I should like to draw attention. Most of the successful orators at the Bar are men who delight not only their audiences in public but also their friends in private life. They are men with pleasant cheerful faces, persuasive voices, and attractive

manners in private life, and are always favourites wherever they go. Such men, to take two recent losses, were the late Sir Lawson Walton, K.C., and the late Mr. Hammond Chambers, K.C. It seems that the best preparation for attracting the interest of the many is to begin by seeking the friendship of the few.

Lastly, there is one fatal defect which is perhaps met more often in the pulpit than elsewhere—the habit of treating your audience as inferior to yourself. However stupid a jury may be, an advocate must be respectful. However wrong in law you may think the judge, you submit your correction to his lordship "with great respect," or you "venture to submit" the negative; and perhaps the old forms of courtesy are not without value. The little speech of the junior, "May it please your lordship and the gentlemen of the jury," etc., the judge's bow to the court, and the return made by the Bar and I hope by others, the courteous opening of the French preacher, *Messieurs et Mesdames*, following a little bow, the formal dress of Bench and Bar—all these and many other little restraints make for that holding oneself in check which is the physical basis of the "manners that maketh man," and surely go to make the man an orator acceptable to his fellow men.—I am, etc.,

July 5th. G. I.

THE VOMITING OF BILE AFTER GASTRO-JEJUNOSTOMY.

SIR,—In an admirable paper by Dr. Drummond and Mr. Morison published in the JOURNAL of July 10th there occurs the following passage by Mr. Morison:

> Whether this is true or not, there is no doubt that when once vicious circle vomiting is fairly established, the best, probably the only, chance for the patient is to make an anastomosis between the jejunum proximal to the opening and a portion distal to it.

I do not know that the actual cause of vomiting of bile after gastro-jejunostomy has ever been definitely determined—whether the bile is regurgitated through the pyloric aperture, or whether it is passed into the stomach by way of the artificial opening. There are, however, two factors which seem to have a direct bearing on its occurrence. One is that the more patent the pyloric aperture the more frequently does it happen; and the other, that the longer the afferent loop the oftener is it met with. I doubt whether any surgeon who has had sufficient experience of the two methods of operating, by the "loop" and the "no loop," would dispute this fact.

I might add a third factor, which, if not a cause in itself, is likely to accentuate the condition in cases where predisposition is already present from one or other of the first two factors. I refer to a want of muscular tone in the gastric parietes, a manifestation usually dependent on a general or constitutional asthenic condition. This factor has been very strikingly exemplified in two of my own cases where there was a direct relation between the patient's bodily state and the amount and frequency of bile vomit. Although I can now look back upon over 100 operations of gastro-jejunostomy performed by the "no loop" method, I do not know of one case in which the vomiting of bile has led to anything more serious than the temporary discomforts directly associated with the presence of the secretion in the stomach, or where I have deemed it necessary to advise an operation for its relief. Even while causing these discomforts, patients continue to make satisfactory progress as regards the gastric condition for which the operation was performed, and eventually get quite well.

Notwithstanding the fact that I have adopted the posterior "no loop" method for several years, and was one of the first to advocate it on the basis of what I considered sound anatomy, I cannot believe it to be, as some have ventured to assert, a sure preventive against the formation of the vicious circle. At present I believe no operator of any experience, whatever be his method of operating, who follows his cases further than the first two or three weeks after operation, is able to say that he never has a case in which vomiting of bile occurs. Prior to the "no loop" method, when a long piece of jejunum was left between the duodeno-jejunal bend and the anastomotic opening, bile in the stomach was a common sequence to the operation; and I must own to being not a little surprised that so good an authority as Mr. Morison still deems it best to leave a loop of gut from "4 in. to 8 in. between the commencement of the jejunum and the stomach opening to be utilized if necessary." If, as seems only too likely, this long loop becomes waterlogged—or, to coin a more suggestive term, bilelogged—one can understand how a practically permanent condition is produced which can only be relieved by an anastomosis between the afferent and efferent loops. In the light of all that the "no loop" operation is supposed and seems to effect, it appears as if Mr. Morison was assuming the almost paradoxical position of creating a condition for the express purpose of exercising a particular method of curing it!—I am, etc.,

Glasgow, July 12th. A. ERNEST MAYLARD.

OPERATIONS ON THE PROSTATE.

SIR,—Mr. C. Wallace's comments (page 49) on the histopathology of prostatic hypertrophy are interesting, and they call for some reply, which I venture to submit. Mr. Wallace holds that this condition is a true hypertrophy of the gland and unconnected with chronic inflammatory processes, as he has not succeeded in finding evidences of such in many prostates sectioned at various stages of enlargement. Pathologists are, I think, divided on these two opposite views, and the questions arise:

1. Does a compensating regeneration of the prostatic parenchyma occur once senescence of the sexual organs has set in? It is conceivable that this may occur in those of "a green old age," but such are surely in the minority. In them even, a histophysiological condition might thus be superposed on a histopathological one, giving rise to an apparent fibroadenoma. The faculty of a compensatory hypertrophy in the remaining kidney after nephrectomy is well known.

2. In view of the implicated lymphatic and lymphoid structures of this gland, how far is the adenoid tissue distinguishable from adenomatous tissue when the latter becomes displaced excentrically by fibrosis?

The term fibroadenoma does not seem a happy one in this connexion, and that of fibromyoma might with equal force be applied. The marked shrinking in the size of such prostates under the localized influence of the *x* rays, and the reduction of the frequency of micturition from eighteen to six times in the twenty-four hours is further evidence of the neoplastic nature of the hypertrophy. It is now known that the projectiles of this molecular agent do not *directly* dissociate the molecules of normal fixed cells.

Regarding Mr. Wallace's opinion on the absence of evidence of pre-existing urethral or cystic infection at the outset of the enlargement—and as to this not being one of the contributory causes, I would prefer to leave it to be answered by clinicians of larger experience in genito-urinary diseases.—I am, etc.,

London, W., July 5th. H. D. MCCULLOCH.

THE POSTMASTER-GENERAL AND OUR PROFESSION.

SIR,—The letter in the JOURNAL of July 10th under the above heading deals with a subject of burning importance to the profession. As matters stand to-day, the question is, Are we, or are we not, as a body to permit our incomes to be legislated out of existence by the Government? If we are to be preserved from such a result it behoves us to show the Postmaster-General and the Government by our actions that postal medical officers and medical men generally not only have votes but are men of wide influence in their respective districts, and have it within their power not only to vote but also to influence many votes for or against any Government.

There are, I am informed, somewhere about 3,000 medical men at present in the employ of the Post Office, and when one considers how extensive an area of influence encircles each of those medical men one can at once realize how much political potentiality is latent within this body of the profession if only they would use it aright. It is all very well to have Utopian notions as to the objection to the profession employing its vote to advance its own selfish interests—certain it is that if they do not do so no other section of the community will concern itself on their behalf, and if their voting power is not painfully impressed upon the Government injustices and hardships will continue to be heaped on their heads.

Party voting is an excellent institution, but as matters go to-day it is most necessary in self-protection that medical men should look beyond mere adherence to party, and decide before casting their votes what each party has done or is doing for or against the profession and its interests. In this way, and in this way alone, can we ever hope to secure justice and consideration.—I am, etc.,

July 11th. OBSERVER.

SIR,—With reference to the letter in your issue of July 10th, p. 111, exposing the painful conduct of the Postmaster-General, as set forth in pathetic terms by "One who has had to Suffer," I would like to point out that your afflicted correspondent is too modest in his statement. He has had to suffer a great deal more than he admits. He has actually been "insulted" by an annual payment of 8s. per man on his capitation list, even though a large number of the officers were never seen from one year's end to the other. If the men lived *outside* his radius of three miles, he would not have to visit them, but would be paid; if they lived *inside* his radius and preferred their own medical adviser, the official man would still be paid just as if he was constantly attending them.

The Postmaster-General absurdly thinks that persons who are well paid for work they are not called upon to do might assist the department in an emergency by accepting a small fee, and thus place the rough against the smooth. Personally, I have a large Post Office appointment, and I get a great deal of the underpaid work to which your correspondent refers; I also get a substantial cheque at the end of each quarter, and as I work, I admit, for money, I see no reason "to swallow the cow and choke over the tail."

I am obliged to confess that (apart from the vaccination question) I am as hopeless a degenerate as the Postmaster-General, and most emphatically state that for a gross total of remuneration I am prepared to give an equivalent of work, and shall not bother my head as to whether this, that, or the other item is over or under paid.—I am, etc.,

July 13th AUSCUL TATE.

THE CHARTER.

SIR,—I am informed that, at the meeting of the Council held on June 30th, it was stated that the 603 signatures to the individual members' petition was an indication of the small amount of support which those who seek an amendment of the Charter in certain directions were able to obtain for their action.

Such is not the case, and I am asked to correct this error.

No attempt was made to obtain a large number of signatures to this petition. It was somewhat hurriedly prepared and lodged, after the announcement of Mr. Dill's opinion (which, by the way, is entirely controverted by very eminent counsel) that the petition of the seven Branches was illegal, *which was published in the* SUPPLEMENT *of January 15th.*

Half a dozen signatures would have sufficed for the purpose of laying the views of the petitioners before His Majesty's Privy Council, but many more than this number were only too anxious to sign it.

No attempt whatever was made to obtain signatures generally. Time did not allow of any such attempt, and, moreover, the expense of such a procedure must in any case have precluded it.—I am, etc,

RUSSELL COOMBE,
Honorary Secretary, South-Western Branch.

Exeter, July 11th.

Medico-Legal.

PROSECUTION OF HERBALISTS.

AT the Leeds Assizes last week some remarkable evidence was given bearing on the practices of two herbalists. Mary Lyle, aged 60, described as a herbalist of Bradford, was charged with wilful murder by means of an illegal operation. A book was found at her residence containing the name and address of the deceased, and a large number of other names and addresses. Several witnesses were called who deposed that they had visited the prisoner and had been operated upon by her, with the result that abortion followed. These witnesses were traced by the entries in the book. Counsel for the defence urged that the testimony of these witnesses was inadmissible on a trial for murder; also these witnesses were accomplices.

Mr. Justice Bray overruled the objection. He held that the prosecution in the case might bring evidence to show a system of procuring abortion, that being an element in the charge, remarking, "I cannot see because an issue in the case is not the whole issue, it can make any difference. Every charge consists of a number of subsidiary issues necessarily." All the witnesses, with one exception, who spoke to having visited prisoner for the purpose of abortion were married women living with their husbands. The dying declaration of the victim, taken shortly before her death in the Halifax Infirmary, was to the effect that prisoner had operated upon her, and that the next day the purpose of the operation was achieved. Objection was taken to the admission of this evidence on the ground that the statements had been made as the result of questions by persons in authority. The judge ruled that substantially no questions were put to the deceased except such as to explain to her what statement she was asked to make. The jury found Lyle guilty of manslaughter, and a sentence of ten years' penal servitude was pronounced. In addressing the prisoner, Mr. Justice Bray said that it was quite plain that she had been guilty of that horrible business for a considerable number of years, and it must be known that all persons who carried on a business of that kind were running the greatest risks, including the severest possible punishment.

On the same day a herbalist practising at Halifax was charged with conspiring with Lyle to procure abortion. The evidence showed that a number of women had visited the herbalist explaining their condition. Failing to obtain the desired result by means of herbs prescribed, the herbalist gave them the name and address of Lyle, for which he charged 2s. 6d., and explained that she would put them right. The herbalist admitted in cross-examination that he knew the women were in the condition they alleged, and that they were sent by him to Lyle to be put right, but alleged that he believed she would use herbs. Counsel for the defence pointed to the wording of the indictment which charged defendant with "counselling, procuring, or demanding" Lyle to commit the offence by means of an "instrument." On this the case broke down, notwithstanding the admissions made, for the judge informed the jury that in this case they would have to find the herbalist knew Lyle was going to use an instrument, otherwise clearly he would not be guilty. There was no evidence to establish this, and the jury brought in a verdict of "not guilty."

About a month ago a demonstration by the "People's League of Medical Freedom," consisting chiefly of herbalists, took place in the same district from which these revelations come. The exposure of the illegal practices of herbalists and the serious consequences attending may cool the ardour of some of the demonstrators, and may also act as a deterrent. These cases, however, which by no means stand by themselves, demonstrate the necessity for some drastic action to prevent these practices, and to restrain rather than increase the medical freedom of herbalists.

UNREGISTERED DENTISTS AND THE PUBLIC.

MANY cases have lately been noted in which patients have suffered from the malpraxis of unqualified dentists, and from the history of the case detailed below there seems little doubt that the fatal issue was due to the cause assigned by Dr. Balfour Graham. The inquiry was one held under the Fatal Accidents and Sudden Deaths Act, and was concerned with the circumstances leading to the death of a Mrs. Thresher, residing in Leven, Fifeshire. On April 30th last Mrs. Thresher had three tooth stumps extracted in Glasgow, and she died on May 31st. The dental operator in his evidence said he performed the operation in the usual way, and he had drawn thousands of teeth during the past year. There was nothing he omitted to do, and he did nothing he ought not to have done.

Dr. Balfour Graham, Leven, attributed death to septicaemia, as the result of having teeth extracted on April 30th. Dr. Graham said it was a terrible thing that people should be exposed to danger by unqualified men, and he thought the matter should be taken up by the proper authorities, with a view of deterring these people from practising. The jury returned a verdict that death was due to blood poisoning, but they were unable to find what induced the blood poisoning.

Dr. Balfour Graham deserves the thanks of the profession for his outspoken remarks, and it is hoped that they may have some effect in preventing people, who ought to know better, placing themselves in the hands of unqualified men, but the verdict of the jury is not encouraging.

FEES TO MEDICAL WITNESSES.

F. J. writes that while on his usual holiday, after having provided a locumtenant at his own expense, according to partnership agreement, he was subpoenaed to return thirty miles and give evidence in the county court on behalf of a patient attending prior to his absence. He asks: (1) What would be a reasonable fee to ask for such a journey and evidence? (2) Whether he is entitled personally to the fee, or should it go to the partnership?

*** It is to be feared that he could only claim the usual fees allowed in the county court, from 10s. to 20s. a day, and mileage one way, which would have to be reckoned from his usual residence, and is 6d. a mile. (2) According to most partnership agreements the fees would go to the partnership.

Medico-Ethical.

The advice given in this column for the assistance of members is based on medico-ethical principles generally recognized by the profession, but must not be taken as representing direct findings of the Central Ethical Committee.

A HOTEL DOCTOR'S FEES.

HOTEL DOCTOR writes that he is frequently sent for by the proprietor of a large boarding-house to attend his guests, and they often leave without paying him. The proprietor wishes to prevent this, and offers to book the accounts and collect them, charging our correspondent 25 per cent. for doing this, and guaranteeing payment. Our correspondent asks whether there would be any ethical objection to this arrangement, and if not whether he might pay the proprietor a commission fee for collecting the accounts without receiving any guarantee, and he asks what percentage would be reasonable? If neither of these propositions is approved, he wishes to know what he ought to do? There is no arrangement with the proprietor that our correspondent should be called in to all his guests, and as a matter of fact he is not so employed.

*** We can see no objection to the proposal of the proprietor from the point of view of medical ethics.

LADY BOUNTIFUL AND POOR LAW MEDICAL OFFICER.

DILEMMA.—While X. was at liberty to settle in practice where he pleased, his action in allowing himself to be set up in opposition to the district medical officer has an ugly look; there may be circumstances which justify the lady in the action she took, and X. in giving her his support; but as we are ignorant of them we can express no opinion.

Public Health AND POOR LAW MEDICAL SERVICES.

GUARDIANS AND MEDICAL OFFICERS.

THE widespread dissatisfaction with the existing conditions of Poor Law medical relief sometimes finds expression in utterances which are both impolitic and unjust. An example was afforded at a recent meeting of the Board of Guardians of the Basingstoke Union, which had proposed to appoint one medical officer and public vaccinator for the whole union. The Local Government Board objected to this arrangement, and the Chairman (Sir R. Rycroft, Bart.), after expressing a confident opinion that the Local Government Board was wrong, proceeded to make an uncalled-for attack upon the medical officers of the union. According to the report in the *Hants and Berks Gazette*, he said that the guardians knew that as a rule the work was not properly done, and that the medical officers were paid a great deal too much for what they did, but not enough for what ought to be done. He considered that one medical officer, debarred from private practice but receiving an adequate salary, should be appointed for the workhouse and for Basingstoke and the immediate neighbourhood. In making this suggestion Sir R. Rycroft would appear to express approval of the report of the Minority of the Royal Commission on the Poor Laws, but he clearly speaks with insufficient knowledge, since both that report and the report of the Majority distinctly affirm that the work of the medical officers is as well done as it can be under the defective conditions for which guardians themselves are responsible. The persons at present arraigned at the bar of public opinion are Sir R. Rycroft and his fellow guardians, and it would be as well that the gentlemen mentioned should recognize this and speak with greater modesty on future occasions.

THE REMOVAL TO HOSPITAL OF INFECTIOUS DISEASE.

A COMMUNICATION was read at the meeting of the Wharfedale Union Joint Isolation Hospital Committee, held on June 30th, from the Ilkley District Council, asking that a regulation to the effect that the fever van should not be allowed to fetch patients from Ilkley after 6 p.m, should be rescinded. Dr. Hyslop, medical officer to the hospital, is reported to have said that if the regulation was withdrawn it would mean that the medical men of Ilkley would keep all their patients until night, as they were afraid that if the van were seen going through the streets the reputation of Ilkley would suffer. After discussion, the committee decided not to accede to the request of the Ilkley Council. Although it was stated that really urgent cases were attended to even after the hour fixed, it appeared doubtful whether it would not be better to remove fever cases after 6 p.m., rather than during the day time.

The Services.

RESPONSIBILITY FOR ROYAL ARMY MEDICAL CORPS (T.F.) UNITS.

IT is notified from the War Office that in peace the responsibility for all matters, including mobilization arrangements, connected with the Royal Army Medical Corps units and *personnel* of the Territorial Force will be vested in the administrative medical officers of divisions.

REGULATIONS FOR ADMISSION TO THE ROYAL ARMY MEDICAL CORPS.

THE official copy of the "Regulations for Admission to the Royal Army Medical Corps, 1909," issued with the Army Orders dated June 1st, may now be had in separate form, and may be obtained through any bookseller at the price of one penny.

ROYAL ARMY MEDICAL COLLEGE.

THE following is the list of prize winners at the recent examination at the termination of the junior course at the college.

Rank and Name.	Corps.	Prizes.
Lieutenant H. S. Ranken ...	R.A.M. Corps.	Herbert.
" " ...	"	De Chaumont.
" " ...	"	Tulloch Memorial.
" " ...	"	Ranald Martin.
" " ...	"	Marshall Webb.
" J. A. Manifold ...	"	First Montefiore.
" C. L. Franklin ...	"	Second Montefiore.
" A. M. S. Jukes ...	Indian Medical Service	Parkes Memorial.
" B. Gale	"	Fayrer Memorial.

Universities and Colleges.

UNIVERSITY OF LONDON.

GUY'S HOSPITAL MEDICAL SCHOOL.

Prize Day.

THE annual garden party and distribution of prizes took place on July 8th in the afternoon. The hospital, the Residential College, the Wills Library, the Gordon Museum, and the school buildings were open to inspection, and refreshments were served in the quadrangle and on the terrace, where a band was playing. The prizes were distributed by the Duke of Devonshire, and a large number of visitors were present. The Dean's report on the work of the school in the past year showed that it had been of a very satisfactory character. The entry of students between October, 1907, and October, 1908, was approximately the same as in the foregoing twelve months. Since the date at which the policy of taking dental pupils for the period of mechanical apprenticeship had been adopted, the expansion of the Dental School had been so rapid that the handing over to it of the existing chemical and physical laboratories in the Petersham Block and the building of fresh laboratories for the medical school, was under consideration. The principal prizewinners were as follows: The *Beaney Prize* for Pathology (£34), Mr. E. L. M. Lobb; the *Michael Harris Prize* for Anatomy (£10), Mr. W. E. Tanner; the *Hilton Prize* for Dissections (£5), Mr. G. Marshall; the *Wooldridge Memorial Prize* for Physiology (£10), Mr. W. S. George; the *Golding-Bird Gold Medal* and Scholarship in Bacteriology (£20), Mr. W. H. Catto; the Junior Proficiency Prizes, Messrs. W. E. Tanner (£20) and W. S. George (£15); the *Treasurer's Gold Medal* for Clinical Medicine, H. I. Jan Mahomed.

A CORRECTION.

In the abstract of the proceedings of the meeting of the Senate on May 19th, prepared from the *London University Gazette*, and published in the BRITISH MEDICAL JOURNAL of June 12th, 1909, p. 1460, under the heading "Brown Sanatory Institution," the office to which Mr. Allan was reappointed was given as veterinary assistant; it should have been veterinary surgeon.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.

Reconstituted Court of Governors.

THE first meeting of the Court of Governors of the College of Medicine under its new constitution was held at the College on July 7th.

Sir George Hare Philipson was unanimously elected Chairman, and Councillor W. J. Sanderson, J.P., Vice-Chairman. Mr. Cecil A. Cochrane was appointed Treasurer of the College, and the following Governors were elected members of the College Council, namely: The Very Rev. the Dean of Durham

(Warden of the University), Lord Ravensworth, Professor Bedson, Mr. Cecil A. Cochrane, Alderman J. Cromie, Mr. J. E. Gibson, and Dr. Clement Stephenson.

UNIVERSITY OF GLASGOW.

THE following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—W. S. Alexander, M.A.; A. C. Anderson, *W. Anderson, J. C. Auchencloss, D. Barbour, *A. M. Bayne, G. T. Bogle, *D. Y. Buchanan, C. J. B. Buchheim, *J. Cairns, J. A. M. Cameron, *A. H. Clark, D. J. Clark, J. L. Cochrane, R. Cramb, *C. Duguid, M.A.; D. Fisher, E. J. Fitzgerald, *G. Fletcher, M.A.; *R. Gale, Florence A. Gallagher, *E. G. Glover, *R. D. Goldie, J. Granger, K. C. G. Gray, A. W. Gregorson, Euphemia A. Hay, W. A. Hislop, W. Howie, B. M. Hunter, J. T. Kirkland, A. Leishman, W. T. Lindsay, W. M'Adam, M.A., B.Sc.; W. C. Macartney, W. M'Connell, D. M'Intyre, R. B. F. M'Kail, C. Macmillan, *J. W. M'Nee, *J. H. M'Nicol, Jeanie D. M'Whirter, M.A.; D. Manson, Mary C. Mitchell, H. B. W. Morgan, J. M'I. Morgan, F. Murchie, F. L. Napier, W. Niccol, C. M. Nicol, D. Purdie, Jessie D. Rankin, J. Robertson, *Margaret E. Robertson, R. C. Robertson, H. G. Robinson, *Winifred M. Ross, W. A. Sewell, B.Sc.; J. S. Somerville, R. S. A. Stewart, A. F. Stewart, *R. W. Sutherland, *D. C. Suttie, R. Sweet, C. H. Wagner, Ethelwyn M. Walters, H. White, D. M'G. Wilson, H. J. Windsor, *D. Yellowlees.

* Passed with distinction in one or more subjects.

UNIVERSITY OF DUBLIN.

THE following candidates have been approved at the examination indicated:

PRELIMINARY SCIENTIFIC (*Physics and Chemistry*).—E. S. Johnson, W. H. R. M'Carter, J. S. English, W. D. Pile, B. C. Powell, H. Boyers, J. A. Small, H. B. S. Dixon, H. V. Fitzgerald, J. G. Butt, R. A. Stewart, E. Bantry-White, A. W. D. Magee, W. J. Merrick, G. B. Hadden, C. C. Mecredy, W. F. Evans, R. O. Smyth, C. P. Kelly, D. H. Hadden, E. G. Fishe, T. J. Kelly, M. Ryan, H. R. Ford.

PRELIMINARY SCIENTIFIC (*Botany and Zoology*).—†E. P. Vickery, †D. H. Hadden, †F. G. Flood, †J. W. C. Stubbs, †F. Harris, †W. J. Merrick, T. Allen, J. G. Butt, R. L. Vance, Dorothy E. Webb, H. G. J. Rutherford, Eleanor Taylor, T. A. Lawder, J. C. A. M'Calden, J. P. Quinn, J. A. Small, A. N. Brady, J. D. Oliver, W. F. Gibson, F. A. Roddy, W. E. Tyndall, R. C. Lowe, R. H. Jones, A. R. Toomey, F. A. L'Estrange, W. R. L. Waters, G. A. Bridge, W. D. Pile, H. J. Brown, E. S. Hatte, C. O'Reilly, G. Buchanan, H. C. D. Miller, J. A. Quin, E. J. Malherbe.

INTERMEDIATE MEDICAL (*Part II.*).—A. Chance, M. S. Moore, P. F. Nunan, W. Frier, H. E. Williams, S. A. Lane, T. W. E. Henry, F. Burke, C. Rutherford.

FINAL M.B., CH.B., B.A.O. (*Part II, Midwifery*).—†Beatrice M. Hamilton, †Hilgard Müller, †E. J. Powell, A. A. M'Connell, A. C. Hallowes, M. A. Diemont, B. A. Molyneux, D. Duff, G. E. Craig, W. H. Hart, J. W. Flood, C. H. Denham.

† Passed on high marks.

VICTORIA UNIVERSITY OF MANCHESTER.

THE following candidates have been approved for the Degree of M.D.:

*G. D. Dawson, †R. L. Ferguson, †C. E. Lea, †A. E. Rayner, Elsie M. Royle, F. P. H. Birtwhistle, T. M. Bride, H. R. Clarke, H. M. Crake, G. F. Porter, T. W. Walker.

* Awarded Gold Medal. † Commended.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A QUARTERLY Council was held on July 8th.

Museum.

A pathological assistant in the Museum was appointed.

The best thanks of the Council were given to the authorities of the Egypt Exploration Fund for their valuable gift of eighty-three skulls of the VIth Dynasty recently found at Abydos in Egypt.

The Darwin Centenary.

The best thanks of the Council were given to the President for preparing an address, on behalf of the College, to the Chancellor, Master, and Scholars of the University of Cambridge, on the occasion of the commemoration of the centenary of Charles Darwin's birth.

Scholarships for the Ensuing Year.

The following nominations of the Nomination Committee were approved by the Council:

Hunterian Professors.—Arthur Keith (four lectures); William Sampson Handley (two lectures); George Coats (two lectures); Richard Horace Paramore (two lectures); Charles Bolton (two lectures).

Arris and Gale Lecturers.—Sydney Richard Scott (one lecture); Peter Thompson (two lectures).

Erasmus Wilson Lecturer.—Samuel George Shattock (six demonstrations).

Arnott Demonstrator.—Arthur Keith (six demonstrations).

Election of President and Vice-Presidents.

Mr. H. T. Butlin was elected President; and Mr. A. Pearce Gould and Mr. R. C. Lucas Vice-Presidents for the ensuing year.

KING'S COLLEGE, LONDON.

AMONGST the Fellows elected by the College Council are Dr. G. E. Shuttleworth and Professor W. J. R. Simpson, M.D.

The following appointments have been made: Dr. R. H. Steen as Professor of Psychological Medicine, and Mr. J. E. Barnard as Lecturer in Microscopy.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

THE following awards have been made in connexion with the examinations at the end of the now concluded summer session:

The *Barker Anatomical Prize*, Mr. H. R. Tighe, and a special prize to Mr. J. S. Pegum; the *Carmichael Scholarship*, Mr. J. T. Duncan; the *Gold Medal in Operative Surgery*, Miss I. M. Clark; silver medal, Mr. F. N. Harvey; the *Stoney Memorial Gold Medal in Anatomy*, Mr. J. T. Duncan. The Barker Anatomical Prize is of the value of £26 5s., the special prize £21, and the Carmichael Scholarship £15. Awards of money prizes, medals, and certificates were also made in connexion with practical histology, practical chemistry, public health and forensic medicine, materia medica, and biology. Lectures and practical courses recommence on October 15th.

CONJOINT BOARD IN IRELAND.

THE following candidates have been approved at the examination indicated:

FIRST PROFESSIONAL.—*M. J. Burns, *E. Harnett, W. I. Adams, P. Ashe, J. C. Blackham, C. C. Boyle, E. Connell, J. D. Cherry, J. Crowley, J. Cohen, P. D. Daly, D. Donohoe, W. St. L. Dowse, T. R. Elliott, D. J. F. Flanagan, B. Goldberg, T. Gray, M. B. Gunn, M. Heenan, E. E. Hobson, F. J. Hunt, A. Humphreys, F. J. Kennedy, M. P. Lee, J. Magner, J. J. Magner, P. M. Moriarty, M. Morrin, B. J. Mullin, K. McGrath, F. T. McKenna, L. McKeever, J. W. O'Brien, T. F. O'Connor, J. P. O'Driscoll, E. B. Palmer, G. E. Pepper, B. Scher, N. A. Sheridan, R. Slaney, E. B. Stoney, J. C. Sproule, J. Stokes, T. S. Sullivan, F. C. Ward,

* Honours.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have been approved in the subjects indicated:

BIOLOGY.—M. S. Bowen, J. K. Nariman.
CHEMISTRY.—M. S. Bowen, H. E. Rose.
MATERIA MEDICA AND PHARMACY.—E. B. Keen, R. H. Pettersson, L. M. Potter.
ANATOMY.—J. P. Jones.
PHYSIOLOGY.—J. M. Coplans, W. R. de C. Shearman.

Obituary.

HARRISON MITCHELL, M.D.EDIN.,

COCKERMOUTH.

WE regret to announce the death, which occurred on July 2nd, of Dr. Harrison Mitchell, of Cockermouth, at the age of 64. Dr. Mitchell, who had been in failing health for some time, underwent an operation, from which he never rallied. Dr. Mitchell, who was a son of the late Mr. Jonathan Mitchell, of Cockermouth, took the degrees of M.B. and C.M. at Edinburgh University in 1867 and M.D. in 1870. After acting for a time as a ship's surgeon on the Cunard Line he began general practice at Aspatria. Two or three years later he went to Cockermouth, but shortly afterwards took over the practice of Dr. Macnaughton at Wigton, and remained there for about twelve years. On the death of Dr. Dodgson, of Cockermouth, Dr. Mitchell returned to his native place as his successor. There he remained at work for a period of twenty-seven years. He held several public appointments, and was much esteemed as a general practitioner and as a public-spirited member of the community. He had a great taste for literature, and was more than once President of the Wordsworth Institute. He also took an active part in church work in the diocese.

In 1893–4 he was President of the Border Counties Branch, and delivered an inaugural address conspicuous alike for its philosophic grasp and the evidence it gave of wide reading and thought. The subject was "The General Medical Practitioner: Teacher and Taught." On various other occasions he read contributions bearing on the intellectual aspects and relations of the medical profession. He was for three years the Representative of the Division at the Representative Meeting, and was elected to fill the same office at the Belfast meeting. In many other ways he took a great interest in the work of the Association.

Personally, he was characterized by a high sense of honour, of duty, and of the place medical men should occupy in the community. In his own town he was in the forefront of every organization to encourage culture and spread knowledge. He was generally the host both of professional lecturers and of those who came under the auspices or at the invitation of the local societies.

Perhaps nothing could better give the keynote of his character than the motto which he adopted for his Presidential address:

> Greatly begin! Though thou have time
> But for a line, be that sublime.
> Not failure, but low aim is crime.

Dr. CRERAR writes:

On July 6th, in the quiet churchyard of Bridekirk, under springing sycamores, the body of Harrison Mitchell was laid to rest. His example and his influence remain as a stimulus and an inspiration to us who live after him. To the members of the Border Counties Branch his name stood for simplicity of heart, kindness of speech, and integrity of conduct. With him could be associated nothing cold, nothing unkind, nothing mean. In his broad humanity, in his tolerance, he possessed a charity which thought no evil. Happy in the midst of country scenes, fond of the poetry of nature and of verse, he passed his life in doing good. With a fine pride in his profession he was ever zealous for the chastity of its honour. The memory of his character will long remain a cherished possession of the Branch.

Dr. HENRY BARNES writes:

Dr. Harrison Mitchell was an ideal general practitioner with a high conception of his duties and responsibilities. From the first he was an active member of our Branch, served the office of President with general acceptance, was a Vice-President of the Section of Medical Ethics at the Carlisle meeting, and for the last three or four years has been the Representative of the Branch at the Annual Representative Meetings, always attending such meetings, sometimes at great personal inconvenience, and taking a keen interest in the proceedings. A year or two ago he published in the JOURNAL a very excellent paper on ambulance teaching as a bulwark against bonesetters and quackery. His loss will be keenly felt by a large circle of friends, both professional and lay.

THE announcement of the death on July 6th of Mr. WILLIAM BROOME GILES, at the age of 53, after a long illness, will be received with very great regret by a large number of friends both within and without the medical profession. He entered the Medical Faculty of University College in 1874, and was a conspicuous figure in everything that had to do with sport. Although he did not seek academic distinctions, he passed through his medical course with credit and obtained the diplomas M.R.C.S. and L.R.C.P. in 1882. He joined his brother in practice in Herefordshire, where he was popular both as a medical practitioner and as a sportsman, gaining, we believe, some considerable reputation not only in the hunting field but as a steeplechase rider. Some years ago he settled in London and practically retired from practice. He leaves a widow and one daughter.

WE regret to record the death of Mr. ALFRED EDWARD WILMOT, M.R.C.S., L.R.C.P., J.P., who died on June 21st, in his 67th year, after a short illness, at his residence Burnham House, Burnham, Bucks. He was born at Melbourne, and came to England at the age of 16, when he entered Madras College, St. Andrews, and afterwards Guy's Hospital, obtaining the diploma of M.R.C.S., L.R.C.P., in 1864. He was assistant for a few years to Dr. Hutchinson, of Bridlington, and eventually settled in practice at Escrick, Yorkshire, in 1869, where he was Medical Officer and Public Vaccinator for eleven years. In 1880 he moved to Burnham, holding similar offices under the Eton Union until 1908, when he retired, and was granted a pension. He was a member of the British Medical Association and a frequent attendant at the Annual Meeting. He took a keen interest in all local affairs, and was Chairman of the Parish Council at the time of and for many years previous to his death. In the early part of this year he was appointed J.P. for the county of Bucks. In politics he was strong Conservative, and often took the chair at local political meetings. A staunch Churchman, he held the office of Churchwarden and School Manager during the greater part of his residence in Burnham. He took a great interest in the local golf club, of which he was one of the founders and also a Vice-President. His funeral, which took place at St. Peter's, Burnham, on June 25th, was very largely attended, and was a striking testimony to the affection and esteem in which he was held by all classes both in his public and private capacities.

THE news that a serious accident had befallen Dr. MCILROY was received with deep regret in County Down. Dr. McIlroy had been in his usual excellent health, and on July 2nd was returning on his cycle from a country visit when he collided with a vehicle in turning a corner, and was thrown on his head and rendered unconscious. He received at once every aid possible, both from his fellow-townsmen and fellow-practitioners, and also from Belfast, but it was seen that he was suffering from fracture of the base of the skull. He never regained consciousness, and died on July 6th. The funeral took place on July 8th, and the deepest respect was shown to the deceased by the very large attendance of all classes and creeds of the little town of Newtownards and surrounding country. Dr. McIlroy, who had been twenty-nine years in Newtownards, was distinguished by many high qualities; quiet and reserved, he was yet shrewd and had much humour. He was untiring in his professional duties, and although self-sacrificing could administer a gentle rebuke which soon stopped imposition. He had been a student of Queen's College, Belfast, and received the M.D. of the Royal University in 1880. He was civil surgeon of the troops of the 4th Battalion Royal Irish Rifles, and medical attendant to Royal Irish Constabulary and Post Office officials. Dr. McIlroy leaves a widow and one son, with whom very sincere sympathy is felt. The son is a medical student.

DEATHS IN THE PROFESSION ABROAD. — Among the members of the medical profession in foreign countries who have recently died are Dr. Charles Burnham Porter, formerly Demonstrator of Anatomy at Harvard under Oliver Wendell Holmes, afterwards Professor of Clinical Surgery in the same university, aged 69; Dr. Jaime R. Costa, Professor of Physiology in the Medical Faculty of Buenos Aires; Dr. Wilhelm Pichler, founder and for many years editor of the *Allgemeine Wiener medizinische Zeitung*, aged 83; Professor Wilhelm Müller, for forty-six years Director of the Institute of Morbid Anatomy in the University of Jena, aged 78; Dr. Alfredo Thomé de Britto, Professor of Clinical Medicine in the Medical Faculty of Bahia; Professor Pfannenstiel, Director of the Clinic of Diseases of Women in the University of Kiel, aged 47—his death was due to blood poisoning contracted during an operation; Dr. Friedrich Endemann, formerly a member of the German Reichstag and of the Prussian Chamber of Deputies and President of the Medical Council of Hesse-Nassau, aged 76; Dr. F. W. Zopf, Professor of Botany and Director of the Botanical Garden at Münster, known by his researches on mycological and bacteriological subjects, aged 62; and Dr. Henry Cazalis, a poet whose pseudonym, "Jean Lahor," was familiar to the French literary world.

FUNERAL OF DR. LALCACA.—The funeral of Dr. Cawas Lalcaca, who was mortally wounded at the Imperial Institute when Sir Curzon Wyllie was shot, took place at Brookwood Cemetery with the rites of the Parsee faith. The gathering at the cemetery was fully representative of the Parsees in London. The floral tributes were particularly beautiful. Conspicuous among them was a wreath from Lady Wyllie inscribed: "These flowers are sent by the wife of Sir Curzon Wyllie, in ever grateful remembrance of the brave and noble man who lost his life on the night of July 1st in trying to save her beloved husband and others, with deepest sympathy."

THE Board of Health and Vital Statistics of the State of Wisconsin has, we learn from the *New York Medical Journal*, decided to establish a Pasteur institute at Madison for the prevention and treatment of rabies. Dr. M. P. Ravenel, Director of the Wisconsin Hygienic Laboratory at Madison, will probably be appointed director of the institute.

Letters, Notes, and Answers.

BRITISH MEDICAL ASSOCIATION AND BRITISH MEDICAL JOURNAL.

THE offices of the British Medical Association and of the BRITISH MEDICAL JOURNAL are at 429, Strand, London.

COMMUNICATIONS respecting Editorial matters should be addressed to the Editor, 429, Strand, London, W.C.; those concerning business matters, advertisements, non-delivery of the JOURNAL, etc., should be addressed to the Office, 429, Strand, London, W.C.

TELEGRAPHIC ADDRESS.—The telegraphic address of the EDITOR of the BRITISH MEDICAL JOURNAL is *Aitiology, London*. The telegraphic address of the BRITISH MEDICAL JOURNAL is *Articulate, London*.

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CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

CORRESPONDENTS not answered are requested to look at the Notices to Correspondents of the following week.

MANUSCRIPTS FORWARDED TO THE OFFICE OF THIS JOURNAL CANNOT UNDER ANY CIRCUMSTANCES BE RETURNED.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL, and not at his private house.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

NEWGATE, who is treating a severe case of Dupuytren's contraction by hypodermic injection of fibrolysin, asks how long the treatment ought to be persevered with. No improvement has been noted up to the twenty-fifth injection.

X. F. B. asks whether pollantin, or "hay fever" antiserum, is still used, and whether the results are still considered as definitely good as they were considered some years ago, when the serum was first used. Where can it be obtained?

ANSWERS.

MINERVA.—Two of the best books on sight testing are *Refraction of the Eye*, by A. Stanford Morton, published by H. K. Lewis; and *Refraction of the Eye*, by Gustavus Hartridge, published by J. and A. Churchill. Books may help, but sight testing cannot be learnt without practical instruction.

SULPHUR HAIR RESTORER.

H. W. H.—Analyses of several advertised so-called sulphur hair restorers have been published from time to time; the following is a specimen of the formulae: Lead acetate, 60 grains; precipitated sulphur, 120 grains; glycerine, 2 fluid drachms; orange-flower water, to 8 fluid ounces.

LETTERS, NOTES, ETC.

TUBERCULOSIS PREVENTION (IRELAND) ACT.

DR. J. C. MCWALTER (Dublin) writes with reference to the Order of the Local Government Board in Ireland (BRITISH MEDICAL JOURNAL, July 10th, p. 105) directing the medical practitioner to notify every case of pulmonary tuberculosis in which in his opinion the sputum is infectious, provided that the patient habitually sleeps in the same room as other persons not so affected, to raise the question as to how a medical practitioner is to ascertain that those who habitually sleep in the same room as the patient are not similarly affected, and how he is to ascertain whether those persons whom he may find not affected do habitually sleep in the same room. Dr. McWalter points out that failure to notify renders a practitioner liable to a penalty of £2, that he will be liable to a lawsuit if he notifies except under conditions which Dr. McWalter considers impossible, and that the notification fee is payable only to the first practitioner who records the case.

SCARLET FEVER, OTORRHOEA, HAEMATURIA.

DR. T. BASIL RHODES (Baguley Sanatorium, Cheshire) writes to correct an error which had escaped his attention in the summary of his paper on Scarlet Fever, read to the Altrincham Division of the British Medical Association, and reported in the SUPPLEMENT, p. 56. One sentence reads: "The severity of the throat symptoms seemed to bear no relation whatever to the question of whether otorrhoea would follow or not." This is the exact opposite of my opinion, as a matter of fact; but if for the word "otorrhoea" in the sentence one substitutes "haematuria," then it would express what I believe.

TREATMENT OF INHERITED SYPHILIS.

IN reference to the note on this subject published last week, p. 120, from Dr. C. F. Marshall, we would point out that in the answer to "Spirochaete" the maternal origin, to the exclusion of paternal origin, was meant. The discussion of Matzenauer's views, to which Dr. Marshall rightly draws attention, will be found *in extenso* in the *Wiener klinische Wochenschrift* for 1903 (sitting of the K.K. Gesellschaft der Aerzte in Wien, February 6th, 1903). This Vienna discussion has already been previously alluded to in the JOURNAL. The discussion was most important. Any one reading it carefully and putting aside mere authority, which has done so much to retard the advancement of knowledge, will see how shaky are the "paternal origin" props. This is not a question of partiality or impartiality, but of throwing overboard propositions which have no leg to stand on, and which have too long blocked the way. The *onus probandi* of the paternal origin of syphilis in the hereditary (so-called) connexion referred to lies with those who are "partial to" or believe in that idea. Up to the present no proof has been forthcoming. As a matter of fact, syphilis is not hereditary in the biological sense, and all evidence goes to show that so-called hereditary or congenital syphilis is acquired by the child from the infected mother.

A MEMORIAL TABLET.

MR. R. J. TALLACK (Honorary Secretary of the Leyton Urban District Ratepayers' Association) writes: It will no doubt interest many of your readers to know that my association have arranged to affix a memorial tablet to the birthplace of Sir Morell Mackenzie, 742, High Road, Leytonstone; the premises are at the corner of Browning Road, near the tram terminus, and within five minutes of Leytonstone Great Eastern Railway Station. The tablet will be unveiled on Monday, July 19th, at 7.10 p.m.

SEA SICKNESS AND PHTHISIS PULMONALIS.

DR. J. REID (London) writes: Some years ago I stated in a letter to the BRITISH MEDICAL JOURNAL that I found müllerin a good preventive of sea sickness, and also very useful in effecting a resolution of a consolidated tuberculous lung. As I have had correspondence on the question, perhaps you will inform the readers of the BRITISH MEDICAL JOURNAL that Burroughs, Wellcome, and Co. make tabloids, the dose of which would be 1 to 12 a day. I had tablets made by another firm, which unfortunately were not pure; and as the plant contains a product which depresses the heart, as well as müllerin, which gives the "chemical reaction" of glucosides and is a tonic to the heart; the *tablets depressed and caused sickness* in a case with weak heart.

DIABETES: A WARNING.

G. writes: The insidious nature of diabetes, with all its hidden dangers, was well exemplified in a case which came under my notice a short time ago. A young married woman came to consult me previous to her setting off on her usual annual seaside holiday. She had been "run down," and complained of gastric trouble, with constipation and piles. I had never previously attended her, having first met her only a day or two previously at the house of a patient who was ill, but I have since ascertained that she was attended by another doctor at a distance, and only a few weeks previously had had a miscarriage during the second or third month of her first and only pregnancy. After seeing her a few times I pronounced her able to proceed to the seaside. On the second day after arrival she was apparently much stronger, but after a short walk she returned to her rooms quite ill, and before night set in she was in a state of insensibility, which was pronounced to be diabetic coma, and which ended fatally in a day or two. Now, this young lady, apparently in good health, was evidently suffering from diabetes in an advanced stage when she came to consult me, yet there was nothing whatever in her symptoms, as she related them, to point to the fact that she was suffering from diabetes, which only three or four weeks previously had caused her to miscarry. Indeed, it was only after her death I was told she had been losing flesh for some time. There are still some of our brethren, whom we call "old fashioned," who insist upon examining the urine of every case they meet with. Indeed, I know from my own experience during the period I held the post of house-surgeon in a large hospital that an occasional case of diabetes was first discovered there to the extreme discomfiture of the medico who sent in the case.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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Eight lines and under	0	4	0
Each additional line	0	0	6
A whole column	2	13	4
A page	8	0	0

An average line contains six words.

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N.B.—It is against the rules of the Post Office to receive letters at *Postes Restantes* addressed either in initials or numbers.